TRANSPORTATION LIBRARY

EDITORIAL INDEX—PAGE 31

# COMMERCIAL CAR JOURNAL

THE MAGAZINE FOR FLEET OPERATORS
OCTOBER 1947



**1948 REO HEAVY DUTY**
MODELS 30—31
TRACTOR CAPACITY UP TO 76,000 LBS. G.V.W.


## Announcing the New 1948 REOS

Right down the line, the 1948 Reo trucks and tractors offer many important improvements, many brand-new features. Heading up the six basic 1948 models are the new, extra heavy-duty Models 30—31. BIG in capacity and performance—geared to top-size hauling jobs, these models are rugged and powerful enough for any type of trucking. In tractor or truck chassis, there's a wide choice of engines, wheelbases, axles and cab-to-axle dimensions to fit your specific operations. You'll want to see these new giants of the road—their 3-man, *full-vision* cab with individual, adjustable driver's seat and other comfort and economy features. Also see the 1948 Reo Models C19 to C25. Plenty of new features here, too—but the familiar Reo front-end styling remains unchanged. It's still the handsomest in the industry—still provides, through cowl-hinged hood, the most accessible engine on the road today. For complete specifications, see your nearest dealer, distributor, factory branch, or write REO MOTORS, INC., Lansing 20, Michigan.

# FOR DEPENDABLE, LOW-COST HAULING...

## get a "Job-Rated" truck like this

Are YOUR hauling costs too high? Are your trucks "gas-eaters"—or in the repair shop too often?

If so—perhaps it's time for new equipment . . . better equipment that *fits* your job.

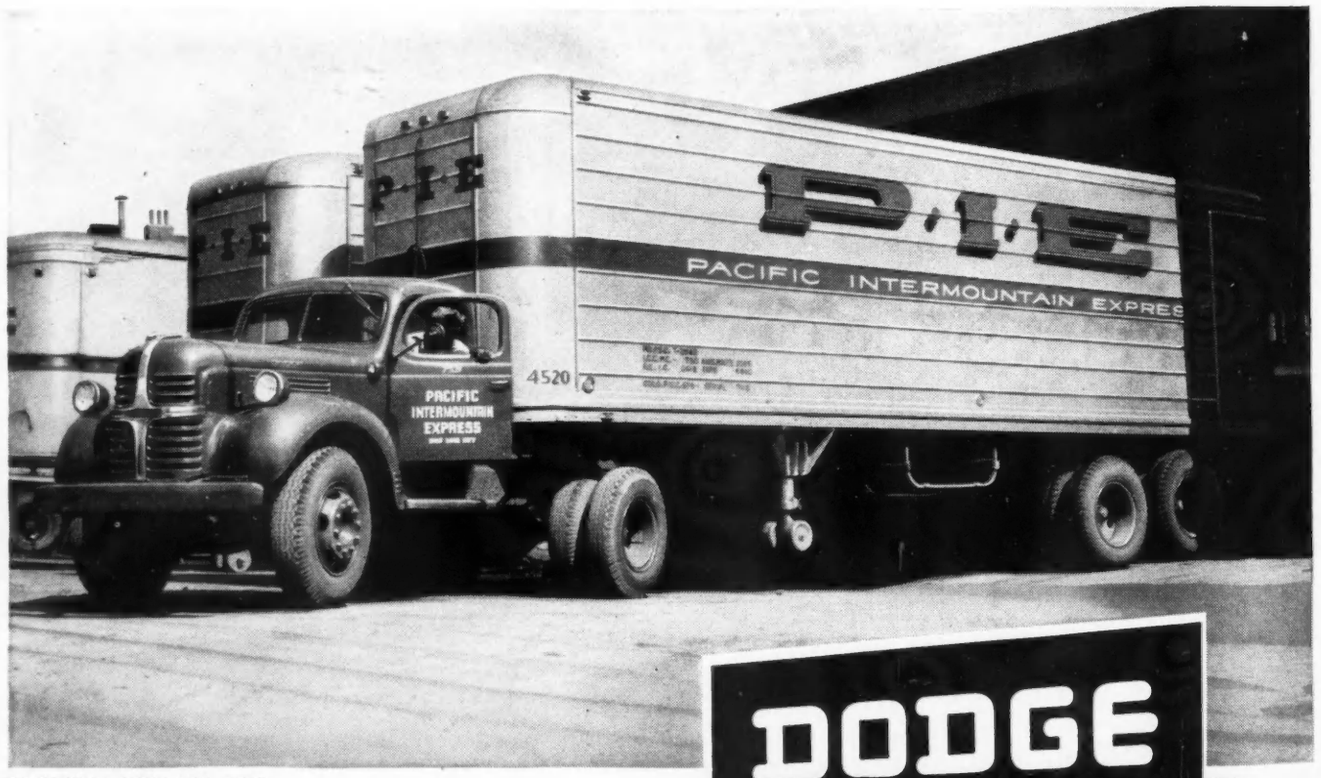
It stands to reason that a "*Job-Rated*" truck that FITS your loads and your operating conditions—will give better performance, enable you to give better service to your customers, and operate at lower cost.

Such a truck will have "*Job-Rated*" power—the right one of 7 great Dodge truck engines for power *plus* economy. It will have exactly the right clutch, transmission, rear axle—the right units throughout—for longer-lasting, more dependable service.

To make sure that your next truck is "*Job-Rated*" to handle your loads over your roads—simply explain your hauling requirements to your Dodge dealer . . . and he will select the right Dodge "*Job-Rated*" truck for *your* job.

★ ★ ★

Your Dodge dealer is interested in your continued satisfaction: *First*, by selling you a truck that fits your job; *Second*, by giving you dependable Dodge truck service; *Third*, by providing you with truck parts that are identical with original Dodge "*Job-Rated*" truck parts.




ILLUSTRATED: MODEL WKA, 3-TON.

ONLY DODGE BUILDS "Job-Rated" TRUCKS

**DODGE**

**Fit the Job . . . Last Longer !**

# COMMERCIAL CAR JOURNAL

*with which is combined Operation & Maintenance*

Reg. U. S. Pat. Off. Published monthly Member C.C.A.
Acceptance under the Act of June 5, 1934, authorized December 18, 1934

LXXIV Philadelphia October, 1947 No. 2



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SUBSCRIPTION RATES: United States and United States Possessions and all Latin-American countries—$5.00 per year. Canada and Foreign—$10.00 per year. Single copies—50 cents. April issue, $1.00.

Owned and Published by
CHILTON COMPANY (INC.)

Executive Offices
Chestnut and 56th Streets, Philadelphia 39, Pa., U. S. A.



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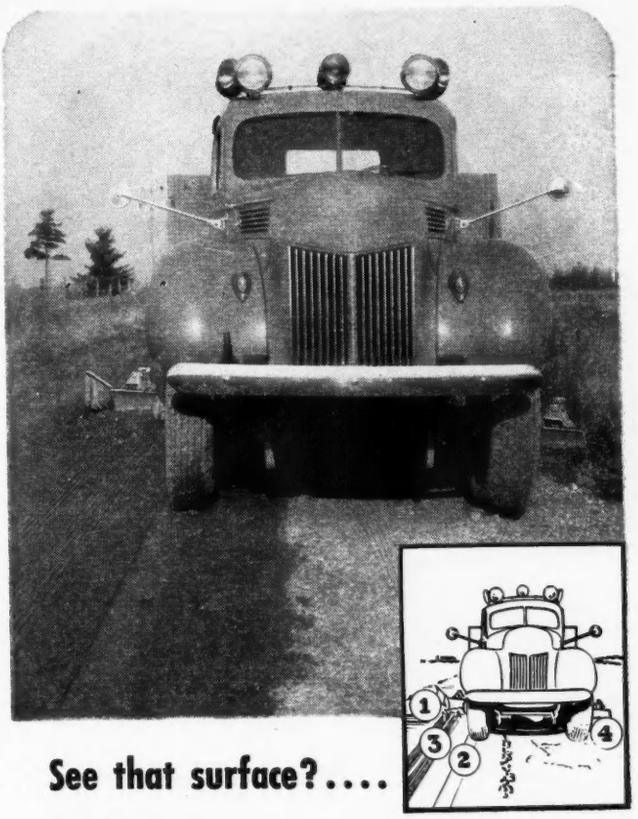




**See that surface?....**

**Look again . . . . . this is a**

**St.Paul HYDRAULIC**

# TRUCK PATROL at work

*Close inspection of this photo reveals these points:*
*(Refer to numbered diagram)*

1. Excellent quality of resurfacing work done by St.Paul Truck Patrol on first pass.
2. The secret of high quality work is in this track left by the patented LEVELIZERS — steel shoes which glide behind the cutting blade holding it in an even plane, free from chatter.
3. Tire prints are clear and sharp. No slipping of wheels to wear out tires.
4. Wide blade brings material in from shoulder while wheels stay on firm ground. Your choice of 12′ or 14′ moldboards. Extensions also available.

***Please write for illustrated circular.***

**ST.PAUL HYDRAULIC HOIST DIVISION**
GAR WOOD INDUSTRIES, INC.
2207 University Avenue S. E.
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Above: INTERNATIONAL MODEL KBR-11
Truck Tractor with semi-trailer

# Winter Transport

## NEEDS INTERNATIONAL TRUCK SERVICE

### Get Trucks in Shape Now . . . at International Dealers and Branches

Truck transport's a grueling job in tough winter weather. Cargoes must get through—products of farms and factories for our homes, for commerce and for industry.

International Truck Maintenance Service is the answer. This *specialized* truck conditioning is quickly available everywhere from thousands of International dealers and the nation's largest company-owned truck-service organization — International branches.

It catches truck troubles while they are little. Prevents major failures. Enables trucks to operate better and speed deliveries.

And International Truck Maintenance Service, regularly carried out, lengthens truck life. It pays off every way on every trip. Take advantage of it now for winter hauls. Give your trucks the best so they can give their best to you. *Give them International Truck Maintenance Service.*

*Motor Truck Division*
INTERNATIONAL HARVESTER CO.
180 N. Michigan Ave., Chicago 1, Ill.

**International Engineered Truck Parts** — Fit more accurately, wear better, last longer. New improvements introduced into current production.

**International Approved Truck Accessories** — Heaters, Defrosters, Fog Lights, Sanders — everything needed for winter safety and comfort.

**Tune in James Melton** . . . on "Harvest of Stars" Sunday! NBC Network. . . . See local newspaper for time and station.

**INTERNATIONAL**
INTERNATIONAL *Trucks*

# CCJ READER'S DIGEST


**DO YOU KNOW THE ANSWERS?**

**Can this hydraulic fifth wheel be used in your fleet to save time and handling costs? P. 46**

**How is shotpeening accomplished and how does it improve part life? P. 47**

**What is the latest on important new model announcements? P. 57**

**CHECK YOUR KNOWLEDGE . . .**

**What are the advantages of building your own bodies? P. 38**

**How's your mechanical I.Q.? Can you get all the answers to "Mechanic's Questionnaire?" P. 64**

**What factors should be considered in selecting the truck with the proper wheelbase for your fleet? P. 69**

## Rolling, Grade and Air Resistance

by G. DOUGLAS RICE, Automotive Consultant

ROLLING resistance, air resistance and grade resistance are among the most important in determining vehicle performance. Their combination dictates horsepower curve, tire size, gear ratio, styling, etc.

This article deals primarily with the determination of the horsepower curve and gear ratios. Graphs have been prepared for a particular combination of tractor and trailer to demonstrate the manner in which the calculations may be made for any other combination. It shows why some 5th gear ratios are impractical and cannot utilize full engine horsepower. It also shows how by modifying the engine horsepower curve, and changing gear ratios to correspond with the new curve, greatly improved performance can be obtained. See page 66.

## Unit Records Out

by GEORGE KIMBEL, Kimbel Lines, Inc.

ELIMINATION of records can usually come only as a result of simplification of equipment and procedures. Our organization has been *over* on records for a number of years, and the cost of keeping these records has been steadily mounting. As we have simplified our equipment, we have found where we need to keep records and where we can dispense with them.

We discontinued our tire records resulting in a saving of more than $50 per month. Tire stock or inventory records have not been eliminated. We keep a record of the cost of all of our trailers but not the cost and service to each individual trailer. We do keep complete mileage records. All ICC records are kept —including mileage cost and per mile and per pound cost. We are contemplating the elimination of truck maintenance costs per individual truck but not total maintenance costs or mileage records.

We have substituted a cost analysis for many of the records which have been eliminated. All costs and mileages go into this cost analysis. Elimination of individual tractor and engine records will save at least $150 a month. Thus we have a minimum saving of $2,400 annually. See page 45.

## PM Plan for 34-Truck Fleet

by FRANK STRANGE, Detroit Creamery Co.

FOR the 34 trucks of our North Branch garage we have worked out a very comprehensive preventive maintenance program. It begins the moment we get a new truck and never lets up throughout its life, for we believe that the most important part of any PM plan is its administration. By that we mean actually bringing the trucks in on time and adhering to requirements item by item.

We use a series of forms developed by GMC Truck & Coach division for scheduling, listing requirements, and keeping long term records. In addition we have developed several forms of our own including a "Light Day" chart (which tells us heavy and light days for any particular route and truck) and a comprehensive engine service record. By putting greatest effort on our 1000-mile check we have successfully postponed the "B" check to 5000 miles. See page 36.

## Two-Way Radio

by L. H. HOUCK

DURING the first nine months of operation Union Electric completed 11,000 two-way radio messages, an average of 1200 a month. Day-by-day maintenance of the equipment was placed in the hands of two second class radio-telephone engineers working under the jurisdiction of the distribution service engineer.

Meticulous records were kept of every phase of the operation from which detailed cost figures could be obtained. These have been used to correct weakness in equipment, to improve using habits of the system, and to improve maintenance.

A total of 264 repaired items were listed for the first ten months of operation. From the results obtained by Union Electric, it appears that the driver is now on the vanishing end of a period which requires a nickel, a place to park and a phone booth to call the office. See page 59.

## Braking Tests

WINTER traction tests made by the National Safety Council showed that ice is an extremely variable and unpredictable substance and that every driver should expect to encounter wide variations in performance under actual road conditions.

While braking distances bear a relationship to air temperature, there are a number of other factors, which combined with temperature, determine the actual skid resistance of the ice surface. These factors include relative humidity, wind velocity, whether it is sunny or cloudy, whether the ice is freshly shaved or glazed over and possibly others.

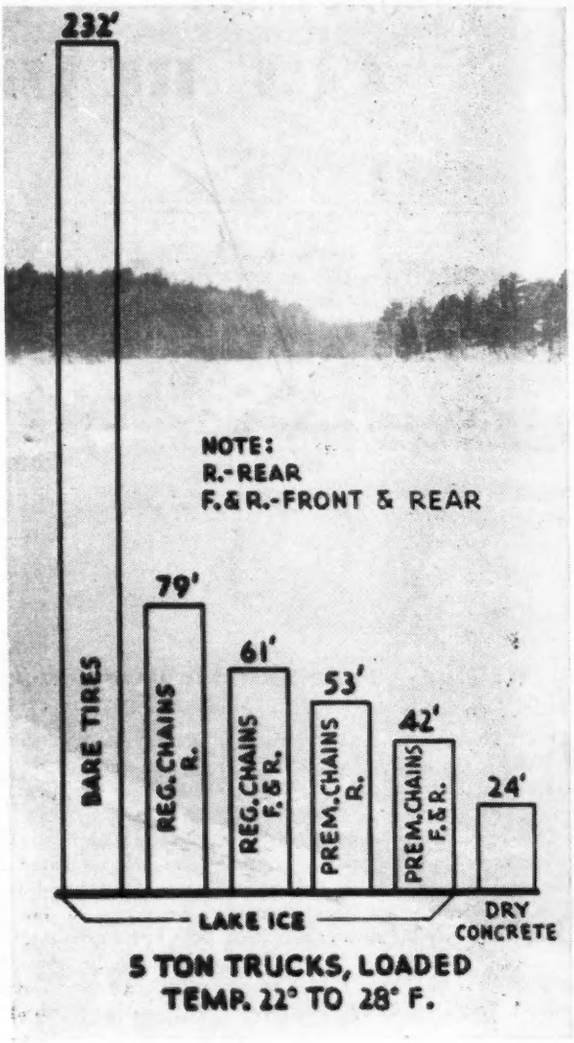
With trucks, the braking distances on ice are above 10 times that on dry concrete. Even on packed snow, braking distances are from three to five times the dry concrete braking distance.

Tire chains reduced braking distance about 82 per cent on glare ice, natural road ice and packed snow.

Pumping the brakes will reduce braking distances to some extent, providing the braking mechanism is of a type which will function rapidly enough and providing the driver employs the proper technique. Power braking produced a 21 per cent reduction in braking distances in these tests. See page 34.

(TURN TO PAGE 246, PLEASE)

**Clintonville tests prove that it takes 10 times longer to stop on ice than on concrete; offer valuable tips, particularly on use of "pumping" and "power braking"**




# BRAKING TESTS Provide

WITH THE approaching winter drop in the mercury threatening to send accident costs higher—statistics show that accident death rates in snow-belt states run 24 to 53 per cent higher in winter than in summer—fleet operators can start now with a hard-hitting cold weather safety program.

Help in preventing skidding vehicles from turning into skidding profits will be found in results of the latest winter traction tests of the National Safety Council.

Extending its research into the skidding and traction characteristics of commercial vehicles begun last year, the Council's Committee on Winter Driving Hazards, under the direction of Ralph A. Moyer, research professor of highway engineering at Iowa State College, conducted an extensive test project during January and February of this year at Clintonville, Wis.

The Clintonville tests were the fourth in a series of similar research projects conducted under the direction of the Council's Committee on Winter Driving Hazards. The first tests were conducted on Lake Calhoun at Minneapolis in 1939; the second series in 1940 on Lake Cadillac, Mich., and the third during January, 1946, at Houghton Lake, Mich.

Giving technical assistance, and working with National Safety Council engineers, were T. J. Carmichael, experimental engineer of the General Motors Proving Ground, and H. V. Larson, manager of the experimental department of the Four Wheel Drive Auto Co., Clintonville.

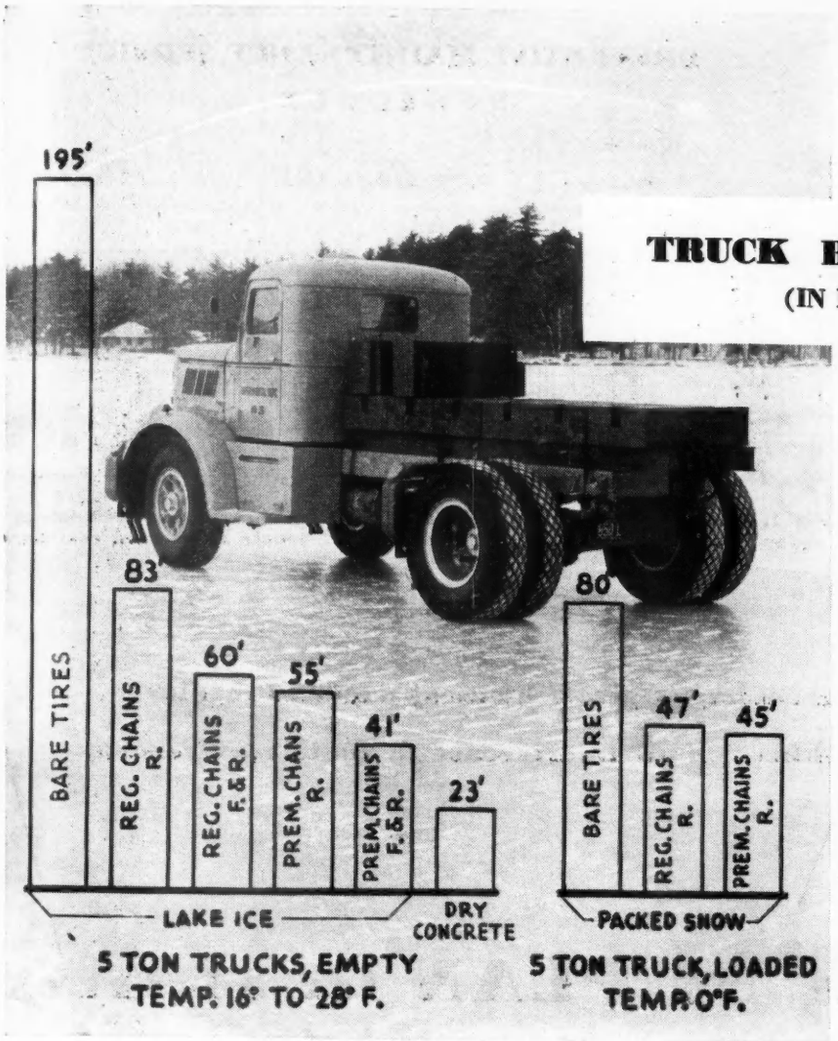
In order to make the tests as comprehensive as possible, more than 1000 stopping, circle and acceleration tests were made on the glare ice surface of Pine Lake and on nearby roads and streets. Vehicles used included two 5-ton trucks (one with four-wheel drive), three passenger cars and a station wagon. All were new vehicles of standard make and in excellent condition.

The tests showed that ice is an extremely variable and unpredictable substance and that every driver should expect to encounter wide variations in performance under actual road conditions. While braking distances bear a relationship to air temperature, there are a number of other factors which, combined with temperature, determine the actual skid resistance of the ice surface. These factors include relative humidity, wind velocity, whether it is sunny or cloudy, whether the ice is freshly shaved or glazed over and possibly others.

Primary results of the braking tests are shown in the accompanying illustration. Average braking distances from 20 mph on glare ice, packed snow and dry concrete show that with trucks, the braking distances on ice are about 10 times that on dry concrete. Even on packed snow, braking distances are from three to five times the dry concrete braking distance.

### Chains Help up to 82%

TIRE CHAINS succeeded in reducing truck braking distances on glare ice, natural road ice and packed snow. With the loaded trucks, average braking distances on ice over a narrow temperature range were reduced from 232 ft to 79 ft with regular chains (plain round-wise) on




# Winter Driving Tips

the rear wheels, a reduction of 66 per cent. With premium chains (reinforced with projecting teeth or cleats) on all wheels, the reduction was about 82 per cent. Even with the best chains on all wheels, braking distances on ice were still nearly twice those on dry concrete, as shown by the tests.

### Sanders Help up to 40%

A COMPARISON of four types of grits commonly used in sanders showed that when the wheels were locked in the customary manner, braking distances were actually increased somewhat with three of the grits. The best grit, a sharp angular slag product, reduced braking distances about 10 per cent. It was found that the best stops possible with sanders could be obtained by pumping the brakes and gearing down, a procedure generally employed by truck drivers which permits the grit to become lodged under the tire. This resulted in a reduction

(TURN TO PAGE 131, PLEASE)

### TEST SUMMARY

**1. Variations in the "slipperiness" of ice due to temperature and condition of the surface have a greater influence on braking distances than mechanical factors of the vehicle or driving techniques.**

**2. The real hazards on road ice are the extremely varied and unpredictable surface conditions.**

**3. Braking distances of trucks and passenger cars are about 10 times as long on glare lake ice as on dry concrete, and from three to five times as long on packed snow as on dry concrete.**

**4. Tire chains reduce truck braking distances on ice and packed snow from 45 to 80 per cent, but even with the best chains on all wheels, braking distances on ice are still nearly twice those on dry concrete.**

**5. Sanders may reduce braking distances on glare ice as much as 30 to 40 per cent if the proper type of grit and braking technique are used. Locked wheel stops with sanders are ineffective.**

**6. Acceleration time with an empty 15,670 lb. four-wheel-drive truck through a speed range of 10 mph on glare ice is about half that obtained with an empty rear-drive truck.**

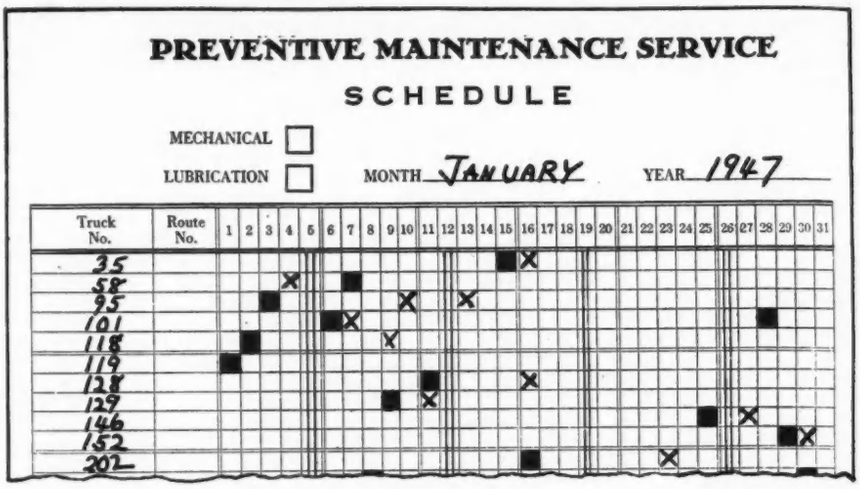
**7. Pumping the brakes can reduce braking distances as much as 20 per cent if the proper technique is used. Better steering control makes pumping advisable even for the inexpert driver.**

**8. Power braking (applying power with the right foot while braking with the left) can reduce braking distance up to 20 per cent for a truck equipped with hydraulic brakes, but with air brakes this technique is not effective.**

**9. There is not much difference in the "slipperiness" of natural road ice and glare lake ice.**

**10. Both glare ice braking distances and acceleration time are about 20 to 30 per cent less with natural rubber tires than with synthetic.**

FRANK STRANGE



PREVENTIVE MAINTENANCE SERVICE

SCHEDULE

MECHANICAL ☐

LUBRICATION ☐ MONTH JANUARY YEAR 1947

| Truck No. | Route No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 35 | | | | | | | | | | | | | | | | ■ | X | | | | | | | | | | | | | | | |
| 58 | | | | | X | | | ■ | | | | | | | | | | | | | | | | | | | | | | | | |
| 95 | | | | ■ | | | | | | | X | | | X | | | | | | | | | | | | | | | | | | |
| 101 | | | | | | | ■ | X | | | | | | | | | | | | | | | | | | | | | ■ | | | |
| 118 | | | ■ | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | |
| 119 | | ■ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 128 | | | | | | | | | | | | ■ | | | | | X | | | | | | | | | | | | | | | |
| 129 | | | | | | | | | | ■ | X | | | | | | | | | | | | | | | | | | | | | |
| 146 | | | | | | | | | | | | | | | | | | | | | | | | | | ■ | | X | | | | |
| 152 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ■ | X | |
| 202 | | | | | | | | | | | | | | | | | ■ | | | | | | | X | | | | | | | | |

*Fig. 1. Form No. 325, copyrighted by GMC Truck & Coach Div., is basis for day-to-day scheduling. "X" indicates due date; black square shows work completed*

**Procedure puts emphasis on scheduling to give vehicles special and regular 1000 and 15,000-mile checks without undue interference to route requirements**

# PM PLAN for 34-Truck


***by FRANK STRANGE***

**Foreman, North Branch Garage**
**Detroit Creamery Co.**


OF THE approximately 750 pieces of motorized equipment owned and operated throughout this zone by our company we have 34 milk retail route trucks, 2 business coupes and a service truck to maintain here at North Branch. To keep the fleet in shape, to keep them out on the road working, we follow a preventative maintainance schedule, and we consider the first requisite of our PM program is to administer it faithfully. This may sound trite but it really is not.

What we mean by administering the PM program is to go over each truck with a fine-tooth comb, on or very close to the day it is due for inspection. Proper administration is also a matter of keeping forms and records. Without the aid of these we believe we would soon be lost in a maze of unrelated and trivial detail and that the purpose of the program would suffer.

We use Preventative Maintainance Work Sheet forms as developed and copyrighted by the GMC Truck and Coach Division. These are abetted by various records developed and kept by myself and which are consulted almost daily. But we start our PM Program with the new truck the minute we get it and before it goes out on the road.

## PM Starts with Pre-Run

WE do this by taking the "A" form (GMC, No. 200) and, following the detailed data as presented thereon. This inspection is really a pre-run inspection and while its use involves an inspection of all parts of the new truck we are chiefly interested in seeing that all nuts and bolts are tightened. It is surprising the number we find that need tightening and it is equally surprising how often many of these stay tight thereafter throughout the life of the truck. We are confident that the benefits obtained from this operation are out of all proportion to the rather minor amount of work involved.

Now the truck is ready for work and it enters into the regularly applied cycle of inspections as called for by PM program. Since our trucks are a start-and-stop fleet and since they compile comparatively low mileages we administer the basic PM check monthly or every 1000 miles.

## Scheduling A Must

TO our mind one of the most important facets of administering the PM is scheduling the trucks for their inspection regularly and then seeing that they are on the floor when they are supposed to be. For scheduling the trucks we use GMC Form No. 325 (Fig. 1).

We head off this sheet with the month and the year. In the left hand column we mark down the truck numbers. Under the columns giving the

| ROUTE # | TRUCK# | LIGHT DAYS. |
|---|---|---|
| 58 | 225 | A |
| 95 | 226 | B |
| 118 | 227 | B |
| 119 | 212 | A |
| 259 | 211 | A |
| 258 | 210 | A |
| 263 | 216 | A |
| 264 | 198 | B |
| 265 | 203 | A |
| 266 | 204 | B |
| 208 | 209 | B |

ENGINE OVERHAUL DATA — NORTH BRANCH.

#1 WHAT WAS DONE: Regr Reground; Chg Changed; Ovh. Overhaul

#2 REASON For this Work: O.P. Oil Pumper; Gas. Bearings; Va. Valves; B.P. Broken Piston

#3 MOTOR WORK DONE BY: ENGINE CAME FROM

| TRUCK | DATA | Speedo Reading | #1 | #2 | #3 | DATA | Speedo Reading | #1 | #2 | #3 | DATA | Speedo Reading | #1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 58 | 1-11-46 | 70010 | cha | O.P. | Gibson | | | | | | | | |
| 95 | 5-24-44 | 35320 | Ovh | O.P. | North | 12-20-46 | 49857.9 | Cha. | O.P. | Gibson | 1-31-46 | 49422 | Ovh |
| 101 | 12-7-6 | 47397 | Cha. | O.P. Bear | Gibson | | | | | | | | |
| 108 | | | | | | | | | | | | | |
| 119 | 5-26-47 | 19913 | C.HA | BRGS | Gibson | | | | | | | | |
| 129 | 8-16-45 | 2965 | Bearings | 2 Iron Rods | North | | | | | | | | |
| 129 | 8-7-45 | 38330 | Cha. | O.P. | | | | | | | | | |
| 146 | 11-2-46 | 105044 | Cha. | O.P. | Hall-Dodds | | | | | | | | |
| 152 | | | | | | | | | | | | | |
| 202 | | | | | | | | | | | | | |
| 204 | | | | | | | | | | | | | |
| 205 | | | | | | | | | | | | | |

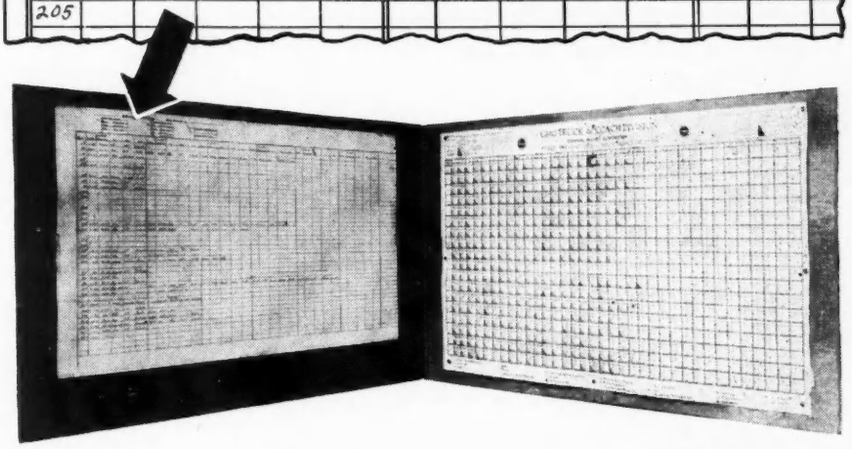


***Fig. 2 (top left). "Light Day" chart shows which side of route is lightest***

***Fig. 3 (above). Wall case holds home-made engine record, left, and GMC (Form 811) 31-month visible PM record***

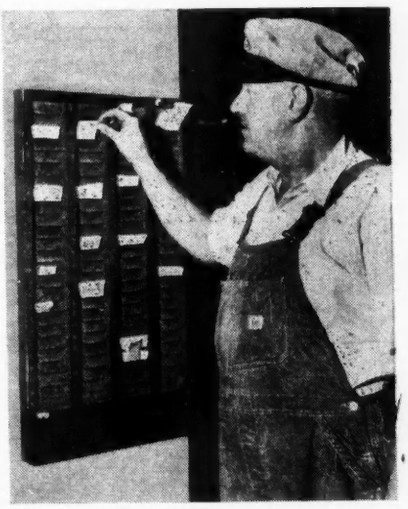


***Fig. 4. Night rack provides slot for each route, is used to warn drivers of coming PM or overhaul schedules***

# Local Fleet

various days of the month, we mark a cross indicating the inspection due date. When this servicing is actually performed the little square is blacked in. By keeping these sheets constantly in front of us marked with the blacked-in squares of crosses we know exactly where we stand, truck for truck, and month by month. The January form (Fig. 1) shows for instance truck No. 35 was due for its PM on the 16th but that it actually got it on the 15th, a day ahead of the schedule. But truck No. 58 was scheduled for the 4th. Due to pressure of other work we could not make it. The next day was Sunday so the truck was not done till Tuesday, the 7th. Sometimes we are a day or so ahead of the schedule, a day or so behind, or right on the dot. But none of the trucks are too far off schedule at any time.

Although we stick closely to the present schedule, we must take other things into consideration, too; chiefly truck drivers and route conditions as they may be on the date specified for the PM servicing.

Some drivers may be reluctant to surrender trucks on a designated day for various reasons. Perhaps the spare truck is not the same kind of truck as his regular one or perhaps he cannot get the type of spare truck he wants to drive. Or there may be other reasons.

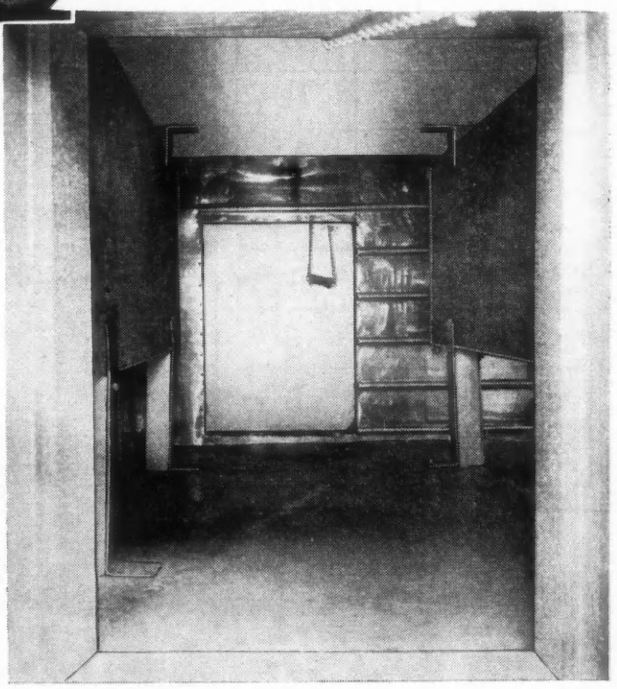
Route conditions may interfere with the scheduled PM for a day or so. We have every-other-day delivery on onr routes and these deliveries fall into two classifications which we have designated as "A" days and "B" days, which merely indicate on what half of the route the truck will be on that particular day.

But to us "A" days and "B" days also mean that this is either a light or heavy delivery day. If the scheduled PM happens to fall on a "heavy" day we will delay it until we come to a "light" day, the reason being that perhaps the spare truck is not equipped to handle the heavy days.

Again the PM may digress from schedule a day or so because our truck drivers work a six-day week. The extra day is filled in by the "swing" man and he, too, must be

(TURN TO PAGE 136, PLEASE)


*Typical of most General Ice Cream bodies is the 980-gal. wholesale delivery model. Both interior and exterior views illustrate the unusually clean lines. Note hold-over plate mountings, beaded aluminum walls*



**Highly specialized shop builds variety of refrigerated models; also handles major body repairs for this 1200-vehicle fleet**

**by C. B. RUSSELL**
Superintendent, Springfield Body Shop
**and D. A. DOBSON**
Eastern Division Superintendent
General Ice Cream Corp.

# 70 Bodies a Year

## Built by Ice Cream Fleet

**CCJ FLEET STUDY**

**DIVIDED INTO 4 PARTS**

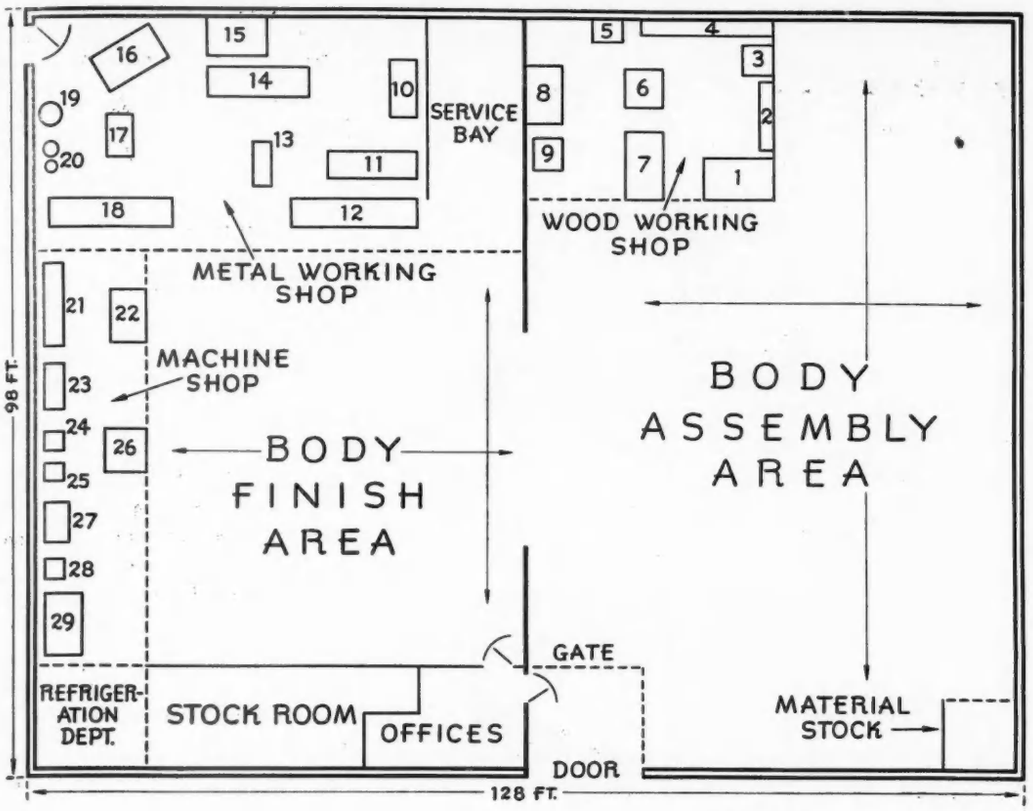
**No. 1, Central Control**
**This article: No. 2, Bodies**
**No. 3, Driver Training Program**
**No. 4, District Garage Operations**

YOUR SHOP at Springfield, Mass., produces an average of 70 new bodies a year. Some of these are wholesale milk jobs. A few are highly specialized units such as a refrigerated-open-rack model for special deliveries. But by far the biggest proportion are carefully-engineered, highly-insulated ice cream bodies, ranging in capacities from 260 to 2600 gal.

Here we also handle major body rebuilding for the 1200 vehicles of the General Ice Cream fleet and this activity accounts for an average of about 50 more units passing through the shop annually. Of these some have been involved in wrecks, while others, having outworn more than one chassis still have a salvage value but need major rebuilding.

We do not profess that our bodies are cheap. A glance at the table on page 40, showing man-hours involved gives a pretty good clue to that angle. But we do say that our bodies are in a closely competitive position with bodies procured from the outside and that for our own particular requirements the bodies are the finest that can be obtained.

That, being a rather uncompromising statement, needs some support. The quality of our wood is a good starting point. For many years it has come from a single supplier. Before we get it, it has been air dried for two full years. After we get it, it is carefully racked and dried for another year before processing. Then for such intricate parts as a refrigerator door frame we go even further. These frames are made up six months in advance of expected use and stacked. If at the end of six months there is any warpage whatsoever we salvage what lumber we can and try again. By planning ahead, tricks like that can be accomplished without slowing



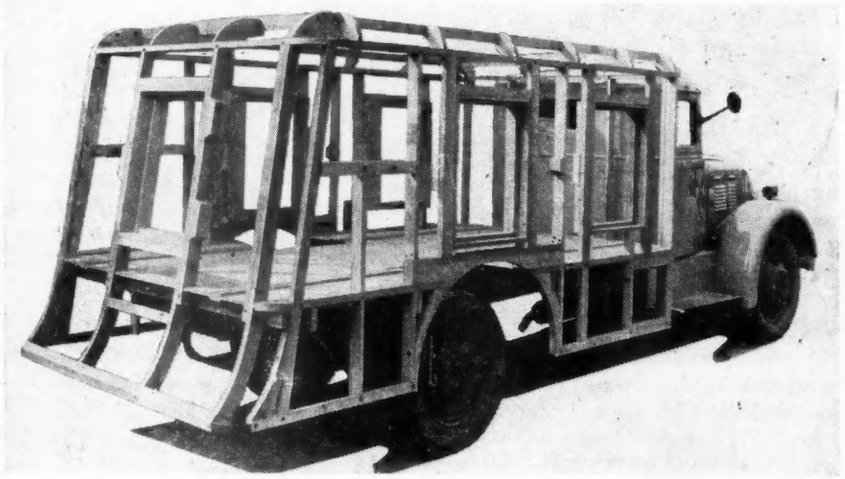

**WOOD WORKING SHOP**
1. Planer
2. Cut-off saw
3. Table saw
4. Bench & Drill press
5. Mortiser
6. Table saw
7. Band saw
8. Planer & Jointer
9. Table saw

**METAL WORKING SHOP**
10. Table
11. Sheet metal former
12. 10-ft metal shear
13. 3-ft metal shear
14. Table
15. Power hammer
16. Roller
17. Crimper
18. 8-ft metal former
19. Electric welder
20. Gas welder

**MACHINE SHOP**
21. Lathe (12 in. swing)
22. Power hack saw
23. Milling machine
24. Large drill press
25. Small drill press
26. Universal iron worker
27. Tool grinder
28. Pedestal grinder
29. 50-ton hydraulic press

***The 128 x 98-ft. highly-departmentalized body shop has complete equipment for fabrication and assembly of all but the most intricate body parts***

***Oak frames, dried for three years, are screwed and bolted throughout***



up production and when the body is finished we know we have a good product. After years of service those doors still fit just as snug, open and close just as easily as they did when new.

### Standard Specifications

OUR standard specifications for all body sizes call for a sheet steel exterior, an oak frame, six inches of insulation and an interior surface of beaded aluminum sheeting. We tried aluminum on the outside but found the amount of weight it saved was not commensurate with the added cost. But for the inside surface aluminum is a lot lighter and even more durable than galvanized sheeting, and infinitely longer lasting that the best of plywoods under the moist conditions of refrigerated service.

Between the inner and outer walls and roof we pack six in. of fibre glass insulation. This comes in block form which exactly fits alongside the 6-in. oak studding and roof frames.

The floor from bottom to top consists of a layer of resin-bonded waterproof plywood, stringers, alongside of which are six inches of cork insulation, a layer of waterproof paper and a topping of heavily galvanized sheet steel. The floor is sealed to the aluminum sides and fitted with corner drains in each compartment. This gives us a waterproof all-metal interior which may be easily cleaned, even with steam, without damage. On later models we are also fitting "weep" holes to permit drainage of condensation between inner and outer walls.

Our refrigeration systems are completely standardized on hold-over systems with electric "plug-in" compressor units and as many as seven hold-over plates. The compressor units consist of a standard 220-volt motor, standard 1½-ton compressor and the necessary condensor and automatic controls. On the biggest types, we use two such units. Our

(TURN TO NEXT PAGE, PLEASE)

# 70 Bodies a Year . . .

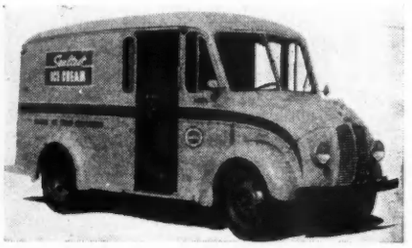
(Continued from Page 39)

major district garages are equipped for refrigeration service but at all other points instructions read to merely replace the entire compressor unit for an exchange if anything goes wrong. Of course there are also regular service instructions followed by all garages for oiling and cleaning and experience shows that if these simple instructions are followed, the units very seldom "go wrong."

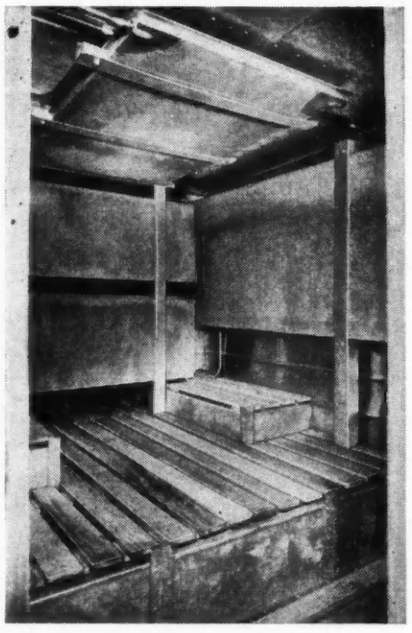
It might be well to point out that while these bodies follow relatively simple construction procedure, they are far from just homely square boxes. They have well-rounded curves, slanting rear panels, liberal amounts of chromium trim and feature an unusually strong lower rear section which serves not only as a body frame member but also as a rear bumper at passenger car height.

Throughout the body there are steel angle irons and reinforcing members of various shapes all fabricated in our own shop. In fact only a few intricate members such as the upper rear curved corners and mouldings, license plate brackets and frames, some trim items and, of course, body hardware are purchased on the outside. Where expensive dies are involved we have found outside purchases in quantity lots far less expensive. But everything else incorporated in the body construction is made up in our own shop.

As a protection against corrosion all metal used in the interior of our bodies is either rust-proofed or thoroughly painted and all exterior hardware and trim is heavily chrome-plated. Being thoroughly convinced of the protection afforded by special mastic undercoatings, we now apply this product to all under-surfaces (except engine pan, spring shackles, brake drums, etc.) of both body and chassis alike.



*The Divco conversion is one of most interesting jobs. Entire rear part of body is insulated and refrigerated. Interior view (below) is looking through door from right side of driver's compartment. Compressor is at right*



### Divco Conversion

ACCOMPANYING illustrations show most of the standardized body types we are currently producing. Perhaps the most interesting is the Divco conversion job. For this we take a standard Model ULM Divco complete with body. First we put in an insulated partition, complete with walk-in refrigerator door, between the load compartment and the driver's seat. Then we add the same type of 6-in. insulation and aluminum inner walls used in our own body types. Five hold-over plates are installed and a standard plug-in compressor unit is mounted in the right hand side of the driver compartment. It takes about 390 man-hours to do the job, but when we are through we have a 520-gal. ice cream body that has worked out very nicely in congested city delivery service.

**STANDARD BODY TYPES**

| Body Type | Body Weight (lb) | Man Hours* |
|---|---|---|
| 260 gal. special delivery | 1200 | 435 |
| 480 gal. wholesale | 4350 | 600 |
| 520 gal. Divco conversion | 3000 | 390 |
| 700 gal. wholesale | 4360 | 635 |
| 980 gal. wholesale | 5200 | 680 |
| 2600 gal. transport | 10650 | 990 |
| 4500 gal. Fruehauf conversion | 26950† | 1240 |

* Includes painting.
† Weight of complete semi-trailer.

### 24-Ft. Reefer

ANOTHER unusual job is the conversion we make of a standard 24-ft. Fruehauf semi-trailer. Again we add six inches of insulation, put in a dividing wall to form two compartments, install 10 hold-over plates, hang two compressor units underneath and finally install five refrigerator doors each fitted with a smaller service door in the lower section. Use of the service door helps a great deal in holding inside temperature down, provides a foolproof escape hatch and at the same time adds little cost since only 2 hinges and an inside latch are used. The weight factor of this unit critical since the whole unit grosses over 26,950 lb. empty. But should

(TURN TO PAGE 126, PLEASE)

*Biggest member of the family is 24-ft. insulated trailer, complete with five doors and two compressor units*


*Next biggest is the 2600-gal. transport built along same general lines as 980-gal. job on previous pages*

*Among smallest is the 480-gal. wholesaler, used primarily for special deliveries and unusually light routes*

# The OVERLOAD

by GEORGE T. HOOK
Editor

## Vehicle Replacements Again Show Effect on Maintenance Costs

THE beneficial effect of vehicle replacements on maintenance costs is being demonstrated again in the case of fleets that are able to make them. In such fleets maintenance costs, which were jet-propelled by the war into the sub-stratosphere, are spiralling downward. They are still high compared with 1941 but it is something that the long upward trend has been reversed.

* * *

**There can be no doubt that the ability to make replacements is the basic reason for the downward movement. There has been no reduction in the price of repair parts, and nothing but a march to higher ground in labor rates. Some fleets have noticed an improvement in the productive efficiency of their shops, but this is too isolated to be considered a general basic reason for lower maintenance costs. Nor has vehicle mileage increased to such an extent that it could be considered a factor. Nor are vehicles doing less work. In most cases average loads are higher. This leaves the credit for lower maintenance costs to the replacement factor.**

* * *

The experience of different types of fleets points up the importance of the replacement factor. For-hire carriers enjoyed priority during the war and the effect of their being able to make some vehicle replacements showed up in maintenance costs. The experience of Class I common carriers of motor freight will serve as an example. According to reports which they made to the Interstate Commerce Commission equipment maintenance and garage expense per mile in 1942 increased 14 per cent over 1941; showed a 70 per cent gain in 1943, and reached a peak in 1944 when a gain of 96 per cent over 1941 was recorded.

* * *

**In 1945 there was a drop in tonnage, operating ratios were at a danger point and a campaign of economy ensued which brought the maintenance account down. Per mile costs in 1945 were 77 per cent higher than in 1941. In 1946 new equipment became available on a large scale, wholesale replacements were made and maintenance costs dropped still further to a point 69 per cent higher than in 1941. The figures for 1947 are expected to show a further decrease.**

* * *

Now contrast that with the experience of two large private fleets, one a petroleum operation and the other a utility. Neither of these fleets was able to make replacements during the war period on anything but an insignificant scale.

* * *

**Using 1941 as the base, repair costs of the petroleum fleet in 1942 were 11 per cent higher; 22 per cent in 1943; 55 per cent in 1944; 100 per cent in 1945, and reached a peak in 1946 that was 122 per cent higher. Vehicle replacements were made and the 1947 repair cost is now down to 100 per cent of the 1941 figure.**

* * *

The utility fleet, which even to this date has not been able to make vehicle replacements in the tonnage range from ½-ton to 1½-ton in anything but piddling amounts, is compelled to endure a stupendous increase in repair costs. The current per-mile figure shows a jump of 250 per cent over 1941. It has been moving steadily upward since 1941 because of the growing age of vehicles. A downward trend is not looked for until replacements on a large scale can be made. It is costing this fleet millions not to be able to spend millions for new vehicles.

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But if public protests persist they may be forced to campaign a crackdown. Instead it is up to employers to campaign courtesy and proper driving practices and thus spare themselves a lot of inconvenience and ill will.

## Zoombies, Paul Reveres, Shysters and Sniffers Bad Boys of the Road

DRIVERS of over-the-road vehicles enjoy a well-deserved reputation as chauffeurs of professional caliber—the best on the highways. But there is still a goodly number who don't deserve the title. This unprofessional segment is made up of zoombies, Paul Reveres, shysters and sniffers. In just that order they are guilty of four practices that continue to be the subject of complaints to state police and highway patrols:

* * *

**1. Not letting vehicles pass in order to pick up speed on a downgrade to make an upgrade just ahead.**

**2. Approaching and passing through villages and small towns at excessive speed.**

**3. Crowding the center line and lane straddling.**

**4. Failure to keep adequate distance away from truck or combination ahead and thereby making it difficult for other vehicles to pass.**

* * *

The zoombies and the Paul Reveres create the greatest amount of violent public reaction because their antics involve high speed. The zoombies in their wild dash down a hill strike terror in approaching motorists and arouse the hostility of those who would like to get in front of them and thus be spared another slow climb up the hill opposite. The Paul Reveres in their mad dash through every "Middlesex village and town" inevitably inspire petitions for speed limits that are much lower than would be permitted with self-imposed restraint.

* * *

**The shysters, who are curb-shy, and the sniffers, who are irresistibly attracted to within exhaust-smelling distance of the truck ahead, cause the greatest amount of non-violent public reaction. They inspire annoyance, irritation and chance-taking.**

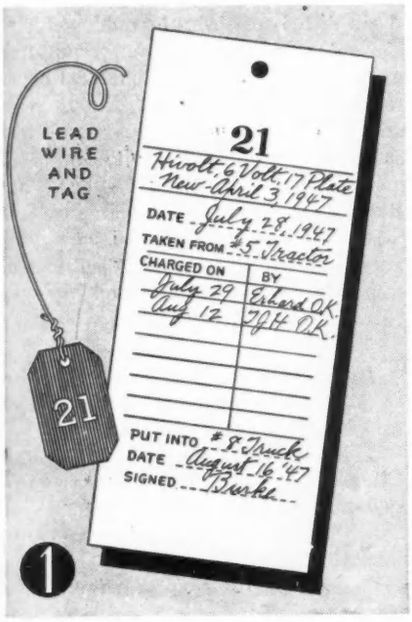
* * *

It is to their credit that in most cases the police have pursued a policy of patience toward all these malefactors.

**Continued in adjoining column**

# SHOP HINTS
## FROM FLEET SHOPS

**Here are the staff's selections for this month. Is your name among those present? Will it be next time? Remember, men, this is your department—reserved for your pet tips on truck maintenance—or your favorite shop-made tool—or any idea that will save time and money in vehicle service. Don't underestimate your ability to help another reader. Many times we find that a tool or a procedure used as common practice in some shops is new to others. So get a piece of paper and put it down—now, while you are thinking about it. You'll be paid for your trouble. Selected contributions receive $5—AND—each month one is awarded $25 as the Hint of the Month Shall we reserve a space in this column for you next month?**



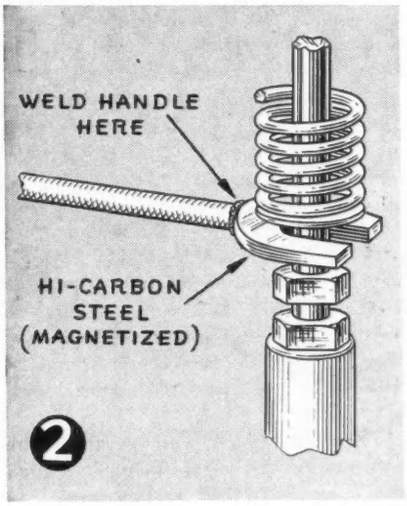

### 1. Battery Records

**by T. J. Hourihan**
**Moulten & Holmes, Boston, Mass.**

I have had by share of troubles keeping track of storage batteries and their installation and care. I devised the following system to give me an instant and complete check-up of all new and spare batteries, their condition, when they are charged, where they go, etc.

On the wall of the bench I arranged a set of hooks to hand the card enclosed—just above the battery. Out of a lead sheet, I made tags as illustrated. attached lead wires, numbered them to correspond to the hooks and hung them on the hooks with the card.

When a battery comes in for charge, a lead tag is attached to it. On the card I note information listed. I find since doing this I have a complete record of all new and spare batteries. (Lead tags will not corrode from the charging fumes or the battery acid.)

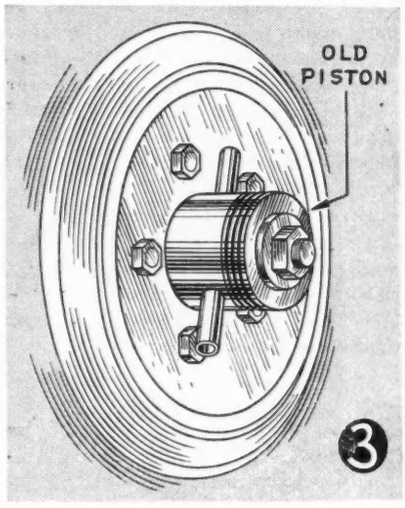



### 2. Valve Tool

**by R. E. Nissen**
**Nubs Auto Service, Toledo, Ohio**

I have found that this little gadget helps a lot in keeping the valve keepers from flying down into the oil pan during a valve job. When this tool is set around the valve stem and the valve is tapped with a hammer, it will catch the keys.

The tool is made by cutting a slot to fit the valve stem out of a circular piece of high carbon steel. The edge opposite the slot is drilled to ½-in., and a ½-in. aluminum handle is set into the magnetized head.




### 3. Axle Puller

**by Roy Conrath**
**Conrath's Auto Repair Shop**
**Indiana, Pa.**

Here is a useful home-made tool for removing rear axles when a regular puller is not available.

Take an old piston of sufficient diameter to go over the axle bearing. Drill or burn a hole in the center of the head. This should be large enough to clear threads on the axle.

Place the piston skirt against the housing and over the bearing, add heavy washers and turn the axle nut down against the piston head. When



## Home Made Ford Sleeve Cutter

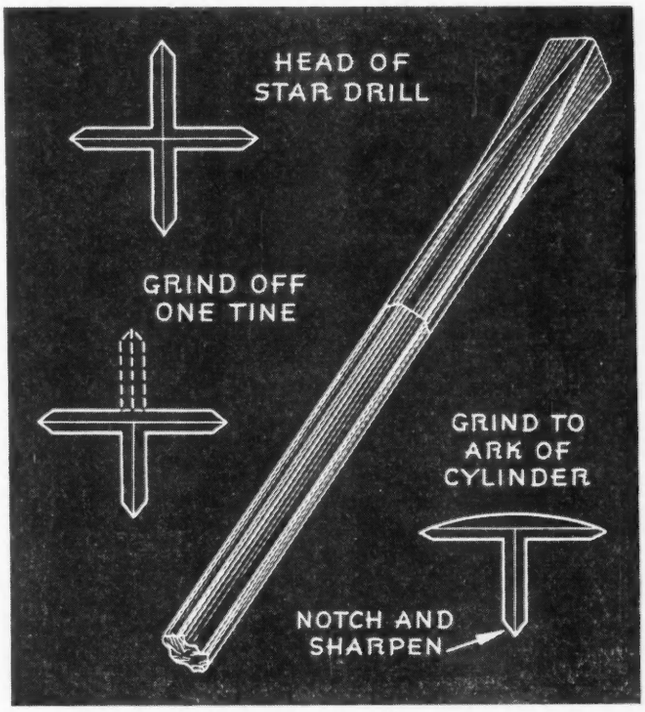
**by James Schultz**

**Philadelphia Electric, Phila., Pa.**

**Here is one of the simplest and most effective tools I have ever seen cutting out cylinders on Ford engines.**

**Take an ordinary electrician's star drill. It should be at least 10 in. long and ¾ in. in diameter. Grind off one of the tines at the cutting end. Notch the opposite tine and sharpen it. This will resemble a letter T with the vertical part of the T notched and sharpened. Grind the cross bar of the T to the arc of the cylinder and smooth it off so that it does not mark the cylinder wall.**

**This cutter is laid on the top edge of the sleeve and hit with a heavy hammer or sledge. The sleeve can be slit down the side and removed in jig time with this tool.**




**You can cut out Ford cylinder sleeves without even holding on to the drill once you get it started. The drawing sketched above will show how this tool is made.**

the thread is exhausted, place more washers against the piston and continue. Old piston pins can be placed in each side of the piston pin hole to act as handles.

You can remove the most stubborn ones with this puller.

### 4. Improving Oil Pressure

**by Tim Vahle, Super. Foreman**
**Iowa Ordnance Plant, Burlington, Iowa**

We have had considerable trouble, in that we do not have any or very little oil pressure on quite a number of our Ford V-8 engines even after we overhaul them.

The rear camshaft has a groove cut all the way across both sides. This is designed to provide lubrication of the oil pump driving gears.

I simply fill the front half of this groove with solder and smooth it up.

This groove is easily soldered by cleaning it and tinning it with a good tinning compound.

This procedure readily solves our oil pressure troubles.

### 5. Slack Adjuster Repair

**by C. E. Ellsworth**
**Ellsworth Sales Co., Eagle Grove, Io.**

I have a method for repairing brake slack adjusters used on Timken axles, and it has solved our problem. The brakes had a habit of backing off the adjustment upon application. Examination showed that the spring assembly was too weak to withstand back pressure from the adjusting worm.

I take a 7/16 x 1½-in. U. S. S. capscrew and turn the threads off for 5/16 in. Then I drop the lock ball back into place and tighten the capscrew securely against the ball. I have had no further trouble with brakes backing off at the adjustment.

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# Shop Hints . . .

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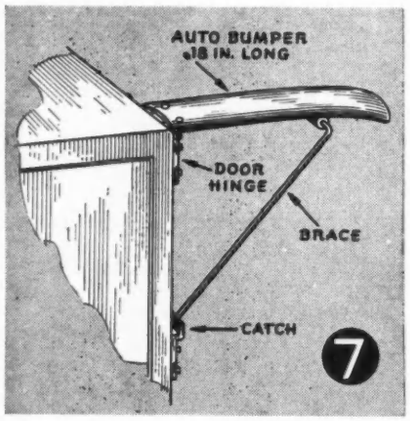



### 6. Home-Made Punch Set

by Russel D. Thompson
Federal Baltimore Truck Co.
Baltimore, Md.

Here is a suggestion that will save money for the fleet mechanic.

An excellent set of punches can be made from discarded Ford exhaust valves. They have a mushroom stem and lend themselves to hard usage.

They can be ground to desired size on a valve refacer by setting it at 90 deg. for pin punches. Center punches or drifts can be ground on the larger wheel at any desired angle. The head of the valve can be cut off with an ordinary grinder.

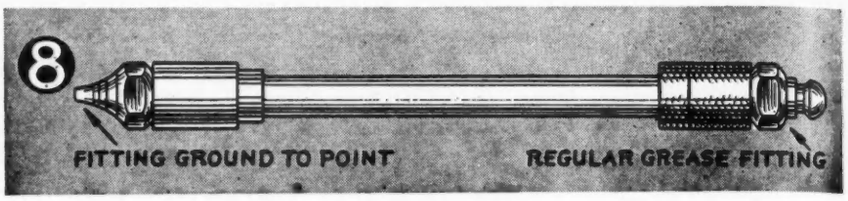
### 7. Tube Repair Stand

by Henry Mikulecky
Washington County Coop. Creamery
Linn, Kan.

I have found this device handy for buffing and installing patches on inner tubes.

I cut about 12 in. off the end of an auto bumper, bolt a regular door hinge to the end and mount it to a work bench. I weld an eye to the underside of the bumper, bolt a ⅜-in. rod to it and fix it to a catch on the leg of the workbench as shown.

This is a handy place to make repairs and can be lowered out of the way when not in use.




### 8. Clutch Bearing Lube

H. J. Hills
Iowa Highway Commission
Postville, Iowa

We have found this device to be a time and money saver in prolonging the service of the greaseless clutch throwout bearings. Most bearings will be good for a lot more service if greased when they start to become noisy.

By drilling a hole in the bearing shell and inserting a grease fitting that has had the end ground to a point, lubrication can be obtained. The fitting we made consists of a ⅛-in. pipe 3 in. long with a regular grease fitting at one end and a modified fitting at the other. This one is ground to a point and has the check valve removed.

The modified end is inserted into the hole drilled into the clutch bearing and the grease gun is used to get grease to the bearing.

### 9. Water Pump Tip

by Preston Coleman
Norristown, Pa.

To install packless water pumps on Autocar engines that have the packing gland type pumps, we remove the nut and disc coupling from accessory shaft, replace the nut and grind it down on a lathe to the same size as the packless pump shaft.

We then drill a ¼-in. hole in the center of the nut and shaft and connect the packless pump with Autocar parts. Coupling pump drive 5N2159, drive clamps 5N2236A.

The packless type pump will line up without any other changes. The new pump lasts four times longer and requires no lubrication.

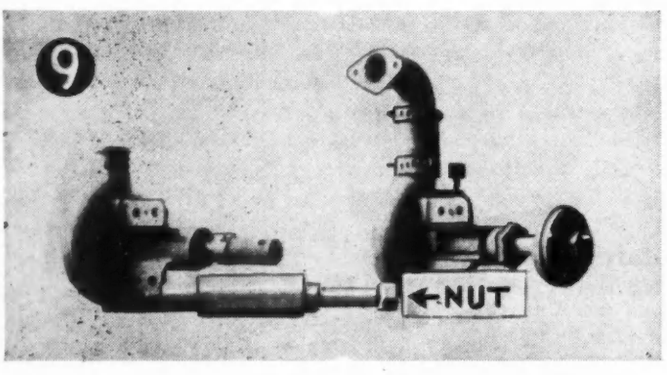
### 10. Mirror Mounting

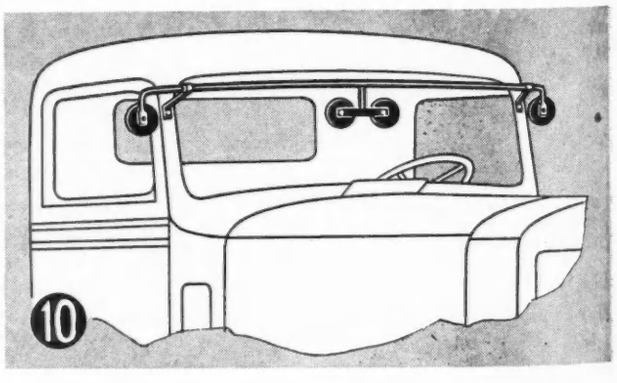
by Paul Shepherd
Columbia Motor Mileage Corp.
Allston, Mass.

Four rear view mirrors can be mounted on light trucks or those using the rear cab window, and vision can be improved a great deal. This will facilitate backing into doorways and tight places and provide safer road operation.

A 5-ft. piece of ⅜-in. pipe or round stock is bent at both ends, leaving about 5 in. at the right angle. The ends are flattened and ¼-in. holes are drilled for the mirror mounting. Iron pipe or round stock is welded to form a Tee and secured to the center of the pipe. Mirrors are fastened to the ends of this as shown.

For vehicles with overhanging bodies only two bolts are needed to fasten the mirror bracket to the front. For other models, a bracket of angle iron will be necessary to fasten from the horizontal bracket to the door hinge at either side. The mechanic will fit the bracket to this particular vehicle.



# Unit Records Out

## Overall Cost Figures Sufficient

**Is feeling of fleet that has gone in for standardization on fewer types of vehicles, tires, etc.**

**by GEORGE KIMBEL**
President, Kimbel Lines, Inc., Cape Girardeau, Mo.

NEARLY everyone is familiar with the story of the firm which had a cost accounting system so complicated that its operation cost was prohibitive. No doubt all truck line operators have at times wondered where all the records and data were leading them.

In order to forestall any idea that we favor wholesale elimination of record keeping, I would like to establish at the outset that elimination of records can usually come only as a result of simplification of equipment and procedures. Where a motor freight line has a highly varied assemblage of equipment of many kinds, makes, sizes and other variable factors, it must certainly keep an adequate record of all of it.

But where a motor freight line such as ours has been working toward simplification of equipment, many of the records previously kept may properly be eliminated.

We now have only two makes of tractors. We use one brand of tire. We are standardizing on one brand of trailer. We are also standardizing on one size of trailer and eventually our tractors will be standardized at a power suitable for these trailers. We are also standardizing our trailer loads. Thus where we have half a dozen variables, another line may have a hundred.

We don't want it said of us that we have advocated elimination of records that are needed to properly arrive at the cost of operation of any unit. But our organization has been *over* on records for a number of years and the cost of keeping these records has been steadily mounting. As we have simplified our equipment we have also found where we need to keep records and where we can dispense with them.

We recently discontinued some of our tire records. We keep a record of the cost of our tires but not a record of the individual tire.

We keep a record of the cost of all of our trailers but not the cost and service to each individual trailer. Trailer cost records as far as the individual trailer is concerned were discontinued six years ago. However, we can get a record of a single trailer or a single tire by merely establishing a temporary record for that purpose, since we do keep complete mileage records.

### Required Records Kept

NATURALLY all the required records of the ICC are kept, which includes mileage cost and per mile and per pound costs.

We are contemplating elimination of truck maintenance costs per individual truck but not total maintenance costs or mileage records. This is growing more and more feasible because the record we once kept so meticulously by the month is now doing an adequate job on a quarterly basis.

We keep a mileage record on fuel pumps, generators, engine overhauls and various things of a similar nature. If we wanted to know the cost of a fuel pump per mile after we had eliminated the individual truck records all we would have to do would be to divide the fuel pump costs by the mileage.

We can take our total maintenance cost and our mileage records and get our cost per mile.

We have substituted a cost analysis for many of the records which have been eliminated. All costs and mileages go into this cost analysis. One of the things it gives us is the operating cost per one hundred pounds of freight per mile, per route or per terminal. When we first started using the system which has been evolved in our own office, it immediately pointed out terminals that were losing money. In one large terminal we had been losing money for years and didn't know it. Six months after the cost analysis system spotted it, we turned a profit on that terminal.

### Unit Tire Records Out

ELIMINATION of individual tire records which were kept daily has resulted in a saving of more than $50 per month. We still have a record of a tire costs and our mileage records will give us the tire cost per mile.

If we were to make a change in our tires, or if we wanted to find out what another brand of tire would do, we would merely set up a record on the tire and get an individual record

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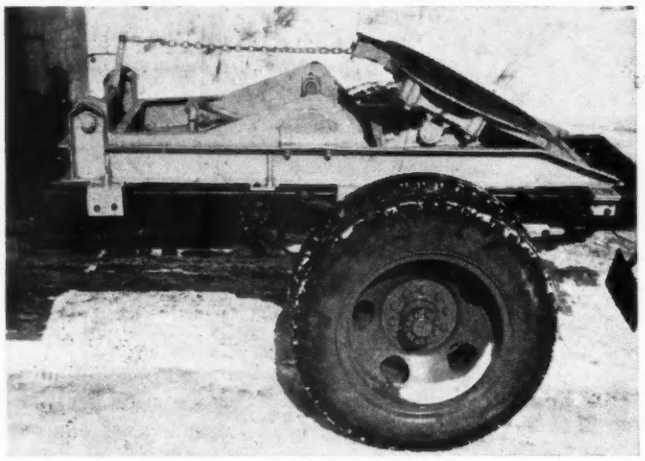
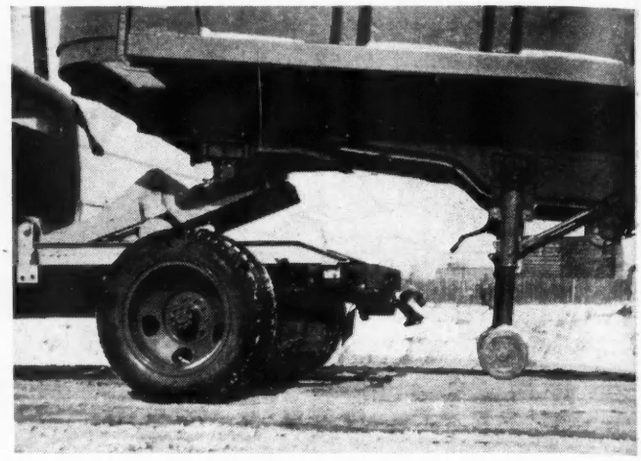
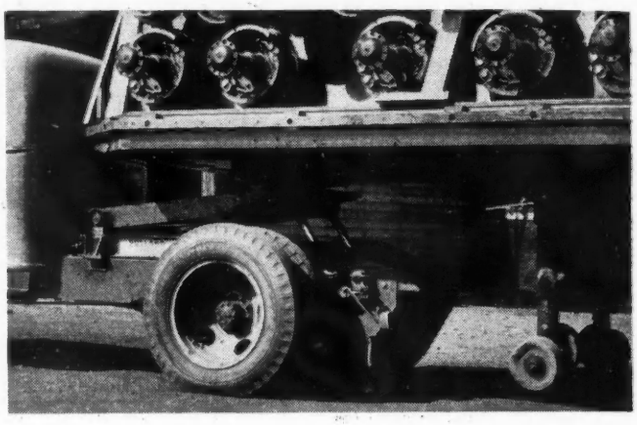




*Above. Details of Pollard fifth wheel showing partial elevation. Full release is controlled from cab*

*Top right. With fifth wheel elevated, landing gear, in lowered position, is completely clear of the ground*

*Lower right. There is power enough to lift full load*



**Actual fleet operations prove economy of hydraulic, one-man unit in spotting semi-trailers**

# Elevating Fifth Wheel

## Speeds Shuttle Operation

FLEET OPERATORS who have to move a large number of trailers each day at switching yards know that it can be a tedious, hard, time-consuming job. In some operations, drivers of switching trucks spend considerably more time out of the cab than in it, cranking dollies and hooking up connections.

Some Detroit operators, however, have been using a new piece of special equipment for their shuttle operations, and they report considerable savings in time and cost where the number of trailers to be moved per day amounts to 35 or more. The equipment is a fifth wheel attachment which is raised or lowered by hydraulic power. The unit (described in CCJ April, 1947, p. 104) was developed by C. E. Pollard of Detroit. It is mounted on the switching tractor and is controlled by the driver from the cab.

Long Transportation Co., a contract hauler, is using one of the units to move trailers from yards to loading docks at the plant of a large automotive parts manufacturer. On a normal day, 70 to 80 trailers are moved on the two-shift operation. Only one truck is required and one man per shift whereas previously two trucks were used with helpers to crank landing gears during rush periods. Some of the moves are up to a half-mile long. A traffic department spokesman at the plant says that trailers can be moved three times as fast as with the old method. The driver simply backs under the semi, engages the fifth wheel, pulls a lever to raise the trailer high enough off the ground to clear obstacles with the dolly wheels down, and is on his way without having left the cab. The whole operation, can be performed in from 10 to 20 seconds. When the trailer is in its new position, the driver lowers the fifth wheel by a touch of a lever and the trailer comes to rest on its dolly wheels, leaving the tractor disengaged and free to move out.

### Personnel Problem Solved

LONG says that not only is there a very worthwhile saving in man-hour and truck costs with the unit

(TURN TO PAGE 124, PLEASE)

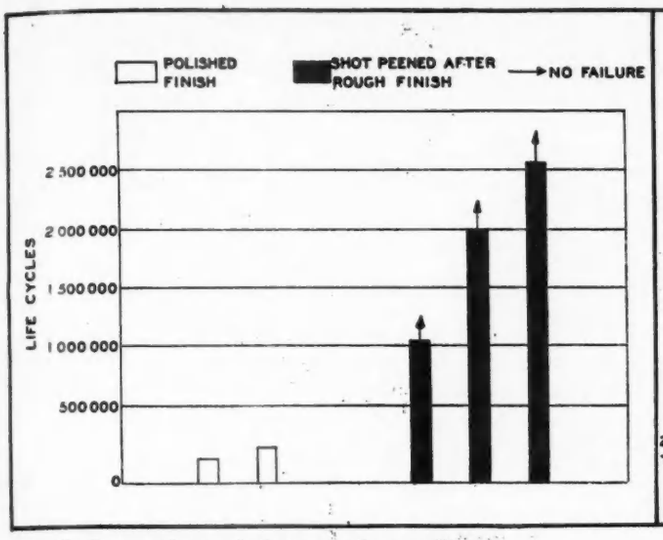



*Fig. 1. Comparison of shotpeened vs polished con rods in Packard-built Rolls-Royce engine*

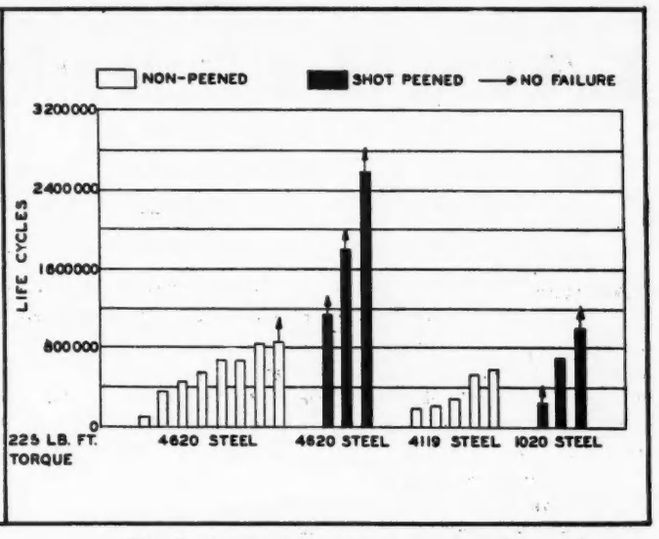



*Fig. 2. Comparison of unpeened and peened gears in Fuller transmission using two types of steel*

# Shotpeening

## Shoots Up Life of Many Parts

**Springs, gears, axles and other parts now have higher life expectancy, thanks to process which can be used in field**

*by* ***FRED K. LANDECKER****
**Manager, Metal Improvement Co.**

SHOTPEENING is a process which will give sensational increases in fatigue life when applied to suitable parts. It is beneficial to any part which is subject to fatigue, shock, or impact. Some of the parts on automotive equipment which show the greatest life improvement are: springs of all kinds, gears, axle shafts, crankshafts, connecting rods, etc.

In shotpeening we pelt a metal part with fine round shot by means of air pressure or centrifugal force. This causes a plastic flow of the surface layers and sets up a high residual compressive stress in the surface. The depth of the layer which is cold forged in this manner varies from .005 to .015 in. depending on material and intensity of peening.

Shotpeening has also been called shot-blasting, but the term shot-blasting today usually applies to the cleaning process in which grit or broken up shot is used to obtain abrasive action. In contrast to this, it is important for shotpeening that the shot used be round, as the corners of broken shot will produce scratches which will act as stress concentrations, and also it should be as closely as possible of uniform size. The shot itself fatigues and breaks up and must be separated constantly while peening. The common steel shot sizes used vary from .016 to .065 in. in diameter. The smaller sizes have much wider applications because the shot used should never be more than half the size of the radius of the smallest fillet or corner.

The intensity of shotpeening can be measured with a gage developed by J. O. Almen, of the General Motors Research Laboratories in Detroit. With this measurement we can accurately specify the desired peening intensity at any time. It must be understood that the same Almen intensity can be achieved in many ways and it is imperative that it is obtained by saturation. Saturation is achieved when the part is uniformly and fully covered by peening to the desired intensity. No advantage can be expected if this is not accomplished. Many reports on this subject tell about the dangers of overpeening. In the author's experience, it is nearly impossible to overpeen, while, as has been shown, underpeening is a constant danger.

### Rocker Arm Test

UNDER the auspices of the National Defense Research Committee, Mr. Almen's laboratories made many tests on shotpeening during the war. The case histories of these

(TURN TO PAGE 116, PLEASE)

*From a paper presented at the National West Coast T & M Meeting, Society of Automotive Engineers.

# LAUGH IT OFF

An aggressive red-haired young man landed a job as city driver with Fleety-Fleet Express and was promptly dispatched with a truck load of freight. An hour later the telephone rang and a voice inquired, "Have you got a red-haired fellow working for you?"

"Yes," replied the dispatcher.

"Well, this is the janitor at the Brentwood Arms Apartments. Your man was here a little bit ago to deliver a package. He insisted on coming in at the front door. He was so persistent that I finally had to draw a gun."

"Good heavens!" exclaimed the dispatcher. "You didn't shoot him, did you?"

"No," answered the janitor, "but I want my gun back."

C C J

*Joe was dead, and John called on the widow to express sympathy. "Joe and I were mighty close friends," John said. "Isn't there something I could have to remember him by?"*

*Tearfully, the widow raised her eyes and whispered softly, "Would I do?"*

C C J

Bill and Jim were very thrifty truck drivers. For ten long years they worked hard, saved their money and finally bought a rig of their own—a bright and shiny 30-ft. semi job for $17,000. They carried a pail full of money down to the truck distributor to pay for it. The money was counted and there was found to be only $15,000 in the pail.

"Aw, Bill," said Jim, "you've gone and brought the wrong danged bucket."

C C J

*Little Man: "Bartender, give me a large ginger ale, quick!"*

*Bartender: "Sure thing, Mac. What's the trouble. You look a bit shaken."*

*Little Man: "I'm plenty angry—that's what I am! I just got home to find a strange man kissing my wife."*

*Bartender: "What did you do?"*

*L. M.: "I picked up his old umbrella and smashed it across my knee and said, 'There! I hope it rains'!"*

C C J

The Claim Agent was becoming impatient at the lateness of the hour, when he said: "I can't see why that young twirp calling on Grace hasn't sense enough to go home. It's past midnight."

The inevitable little brother spoke up and said: "He can't, father; sister's sitting on him."

*"Mistuh lawyer, I wants a divo'ce f'um my ol' man Charley."*

*"Why? What has the rascal been doing?"*

*"Nothin'. Dat's the trouble. He gone an' got religion, an' I ain't tasted chicken fo' three months."*

C C J

"SON, WHEN THAT NAUGHTY BOY THREW STONES AT YOU, WHY DIDN'T YOU COME AND TELL ME INSTEAD OF THROWING THEM BACK AT HIM?"

"AW GEE, MOM, WHAT GOOD WOULD THAT DO? YOU CAN'T HIT THE SIDE OF A BARN."

C C J

A member of the Panhandlers Union No. 41144 approached a man on the street and said: "Would you give me $37.60 for a cup of coffee?"

"What!" exclaimed the man, "Coffee is only a dime."

"Well, gosh a'mighty, Mister," said the bum, "you wouldn't expect me to go into a restaurant wearing this shabby old suit."

C C J

*The tank fleet operator and his spouse sat down to Sunday dinner:*

*"Henry," said the wife, "did you notice the mink coat on the lady in front of us in church today?"*

*"No," confessed Henry, I'm afraid I was dozing."*

*"Humph! A lot of good the service did you!"*

**"She sure is sluggish since we made that last turn."**

The Safety Director's wife had taken little Jerry with her on a shopping expedition. She was about to buy a thousand-dollar fur coat, when Jerry tugged at her skirt and announced, "Mommy, I gotta go."

"Wait," commanded mommy.

"No, I gotta go now," he insisted.

Anxious to consummate the sale, the proprietress of the shop volunteered, "I'll take him, madam."

When they returned, the mother commanded, "Now thank the nice lady for being so nice to you, Jerry."

"I don't need to thank her," said the small one. "She had to go, too."

C C J

*"Well, Johnny, how did you get along in school today?"*

*"Okay, Mother, but that new teacher is always asking us fool questions. Today she asked everybody where they were born."*

*"Well, you certainly knew the answer to that—the Woman's Hospital."*

*"Betcha life I know! But I didn't want the whole class to think I was a sissy. I said the Yankee Stadium."*

C C J

Freight Handler: "Doc, if there's anything wrong with me, don't give me a long scientific name. Say it so I can understand it.'

Doctor: "Very well—you're lazy."

Luke: "Gee, thanks. Now give me the scientific name. I got to report it to my foreman."

C C J

*"I wonder," beamed the young housewife, "if you would weigh this package for me?"*

*"Why certainly," the butcher agreed affably. "It weighs exactly three and one-quarter pounds."*

*"Thank you," the customer replied. "It contains the bone in the four pound roast you sent me yesterday."*

C C J

When the little mink died and went to Heaven St. Peter told him, "We haven't had any minks up here before, so we don't know exactly what to do for you. However, you were a very good little mink on earth and we want you to be happy, so we will give you anything you want."

"Please, St. Peter," pleaded the little mink, "could I have a coat made out of chorus girls?"

**Resume Work**

FLEET OPERATORS' EXPERIENCE HANDBOOK

# When Buying Engine Oils Experts Demand

# TOP QUALITY

**Quality is a factor governing the choice of an oil by 63.64%.**

**Most fleets standardize on one type of oil; heavy-duty leads**

*Analysis* ***by A. W. GREENE,*** *Managing Editor, Commercial Car Journal*

QUALITY IS THE MOST IMPORTANT FACTOR that governs the selection and purchase of an engine lubricant for the country's leading fleets, according to COMMERCIAL CAR JOURNAL'S Board of Experts. In fact, of the 231 fleetmen who disclosed the basis on which their engine lubricant purchases are made, 39.39 per cent claimed that top quality was their *only* consideration. Of the remaining fleets, 22.08 per cent indicated that quality was one of two factors, and 2.17 per cent checked quality as being one of three factors that entered into the purchase of their engine lubricants. Thus, altogether, 63.64 per cent of the Experts went on record to point out that top quality is an important, if not the exclusive, factor that determines whose engine oils they buy.

The other factors that enter into the purchase of engine oils by the Board of Experts are shown in Table 2. Second to those who buy solely on the basis of quality are the fleets who require oil suppliers to meet certain definite product specifications. Fleets that buy on the dual basis of price and quality, 11.26 per cent, and those who buy on the basis of quality and specifications, 10.82 per cent, make up the next larger groups numerically.

Only one vocational group—Petroleum—is not represented in the quality column, although 12.50 per cent are to be found in both the price and quality, and in the quality and specifications columns. Because it is conspicuous by this absence, some comment is warranted. The fact is that these fleets belong to the major producers and distributors in the petroleum industry. The probability is that—doubtlessly using their own products—they either are taking quality for granted or are including it in their specifications.

In the interest of accuracy, another explanation seems necessary. The 61.02 percentage figure shown in the specifications column for the Government Group is not truly representative of the four branches of government listed. If space permitted a finer breakdown of this table, it would be shown that the Federal government buys practically all of its engine lubricants on a specifications basis, whereas only a small percentage of the State, County and Municipal government buy this way.

Otherwise, all other percentages are representative of the various vocations in their respective groups.

It is quite likely that the percentage of those who are on record demanding a top quality engine lubricant would be much greater if

## Experts Operate Big Fleet

**Last year, this group operated 55,982 vehicles for a total of 817,117,674 miles**

**Table 1**

| VOCATIONAL GROUPS | Total Number Fleets Reporting | Total Number Truck and Truck-Tractors Operated | Total Number Passenger Cars Operated | Total Annual Mileage Reported |
|---|---|---|---|---|
| COMMON CARRIER GROUP Local and Over-the-Road | 44 | 5,775 | 419 | 187,525,424 |
| FOOD DISTRIBUTION GROUP Bakeries, Dairies, Meats and Other Food Products | 47 | 10,951 | 974 | 120,271,253 |
| GOVERNMENT GROUP State, County, Municipal, Federal | 59 | 11,181 | 3,848 | 179,458,781 |
| CONSTRUCTION GROUP Builders, Quarries, Gravel | 6 | 844 | 170 | 11,418,000 |
| INDUSTRIAL GROUP Local and Over-the-Road | 2 | 121 | 30 | 2,600,000 |
| PETROLEUM GROUP Producers and Distributors | 9 | 1,913 | 852 | 55,771,345 |
| PUBLIC UTILITY GROUP Gas, Power, Water and Telephone | 37 | 10,074 | 5,786 | 155,176,858 |
| RETAIL DELIVERY GROUP (Other than Food) Dry Cleaning, Laundry, Newspaper, Coal and Ice, Department Stores, Beverage | 18 | 1,609 | 131 | 12,740,185 |
| TRUCK RENTAL GROUP | 5 | 610 | 308 | 32,827,000 |
| TRUCK AND BUS FLEETS, MIXED | 9 | 325 | 61 | *59,328,828 |
| TOTALS AND AVERAGE | 236 | 43,403 | 12,579 | 817,117,674 |

* Includes mileage of 1871 Buses

# Experts Demand Top Quality Oils for Their Trucks

## 39.39% buy exclusively on quality basis, 31.60% set specifications

**Table 2**

| VOCATIONAL GROUPS | Total Number Fleets Reporting Quantity Purchased | Total Quantity of Oil Purchased (Quarts per Year) | Miles Operated per Quarts Oil Purchased | BASIS OF PURCHASE: Total Number Fleets Reporting Basis of Purchase | Quality (Per Cent) | Specifications (Per Cent) | Price (Per Cent) | Price and Quality (Per Cent) | Quality and Specifications (Per Cent) | Price, Quality and Specifications (Per Cent) | Price and Specifications (Per Cent) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| COMMON CARRIER GROUP | | | | | | | | | | | |
| Local and Over-the-Road | 38 | 1,166,164 | 129.42 | 44 | 50.00 | 11.36 | ..... | 22.73 | 15.91 | ..... | ..... |
| FOOD DISTRIBUTION GROUP | | | | | | | | | | | |
| Bakeries, Dairies, Meats and Other Food Products | 47 | 827,152 | 135.55 | 45 | 51.11 | 15.55 | 6.67 | 8.89 | 11.11 | 6.67 | ..... |
| GOVERNMENT GROUP | | | | | | | | | | | |
| State, County, Municipal, Federal | 59 | 1,970,304 | 71.58 | 59 | 13.56 | 61.02 | 3.39 | 8.47 | 6.78 | 1.70 | 5.08 |
| CONSTRUCTION GROUP | | | | | | | | | | | |
| Builders, Quarries, Gravel | 5 | 64,800 | 114.47 | 6 | 50.00 | 33.33 | ..... | ..... | 16.67 | ..... | ..... |
| INDUSTRIAL GROUP | | | | | | | | | | | |
| Local and Over-the-Road | 1 | 8,000 | 200.00 | 2 | 50.00 | ..... | ..... | ..... | 50.00 | ..... | ..... |
| PETROLEUM GROUP | | | | | | | | | | | |
| Producers and Distributors | 8 | 332,200 | 162.84 | 8 | ..... | 62.50 | 12.50 | 12.50 | 12.50 | ..... | ..... |
| PUBLIC UTILITY GROUP | | | | | | | | | | | |
| Gas, Power, Water and Telephone | 32 | 983,768 | 146.97 | 35 | 40.00 | 34.28 | 2.86 | 11.43 | 8.57 | ..... | 2.86 |
| RETAIL DELIVERY GROUP | | | | | | | | | | | |
| (Other than Food) Dry Cleaning, Laundry, Newspaper, Coal and Ice, Department Stores, Beverage | 17 | 134,400 | 91.07 | 18 | 72.22 | 5.56 | ..... | 5.56 | 11.10 | 5.56 | ..... |
| TRUCK RENTAL GROUP | 5 | 191,440 | 171.47 | 5 | 80.00 | 20.00 | ..... | ..... | ..... | ..... | ..... |
| TRUCK AND BUS FLEETS, MIXED | 9 | 1,051,508 | 56.42* | 9 | 33.33 | 44.45 | ..... | 11.11 | 11.11 | ..... | ..... |
| TOTALS AND AVERAGE | 207 | 6,729,736 | 106.42 | 231 | 39.39 | 31.60 | 3.03 | 11.26 | 10.82 | 2.17 | 1.73 |

* Includes oil consumption of 1871 Buses.

*Table 2. While 39 per cent of the above fleets confine requirements to top quality, many fleets list quality as one of one or two other conditions of purchase. Columns at left show that the life of a quart of oil averages 106.42 miles*

FLEET OPERATORS' EXPERIENCE HANDBOOK

the remaining factors that enter into the purchase of engine oils for truck fleet use could be studied in greater detail. For example, most of the fleetmen who buy their oil on specifications did not outline them in detail. This made it impossible to determine if quality was a factor. However, a large enough number supplied sufficient additional information—such as statements that they were using certain well-known Army or Navy engine oil specifications—to justify the conclusion that one of the objectives of the specifications was to insure obtainment of a top quality product.

Table 2 discloses other interesting facts relating to the purchase of engine oil. One of these is the average amount of oil purchased and consumed annually by fleet operators.

Two hundred seven of the 236 fleetmen participating in this survey showed that their combined average annual purchases of engine oil totaled 1,682,434, gal., which amounts to 6,729,736 qt., as shown in the table.

Further, from the mileage data supplied by these fleets, it was determined that the national average number of miles operated by their vehicles per quart of oil purchased is 106.42.

### *Types of Engine Oils Used*

INASMUCH as lubrication engineers currently are placing as much stress on the use of the correct type of engine oil, as well as on the quality, the Experts were asked what type of lubricants they were now using. Their answers show that all three types are being used, with heavy-duty engine oil showing a slight majority.

The predominant practice seems to be to use a single type of engine oil, of the required viscosity, for the entire fleet, whether it comprises light, medium or heavy trucks, or any combination, including passenger cars and buses; 69.40 per cent of the nation's leading fleets operate this way. The remaining 30.60 per cent use two or three types of engine oils.

A study of Table 3 will show that of the fleets that have standardized on one type of engine oil, 29.74 per cent use the heavy-duty type, 23.71 per cent use regular, and 15.95 per cent use the premium type. Regular oil is defined as being a straight mineral product. Premium oil also is a mineral product but contains anti-oxidation and anti-bearing-corrosion properties. The heavy-duty oil is a mineral product with detergent as well as anti-oxidation and anti-bearing-corrosion properties.

Of the fleets that use two or more types of engine oils, 14.22 per cent use premium and heavy-duty types, 11.64 per cent use regular and heavy-duty types, 3.02 per cent use regular and premium oils, and 1.72 per cent use all three. The tendency among these fleets is to use regular or premium oils for the light trucks and passenger cars, and premium or heavy-duty oils in the medium and heavy-duty vehicles.

### *How Fleets Select Engine Oils*

BECAUSE the selection of an engine's lubricant plays an important part in its economical and efficient performance, the members of the Board of Experts were asked how they decided upon the type of engine oil, or oils, they now used. The majority, 64.50 per cent, indicated that their decisions were made solely on the basis of their own fleet experience—performance results under their particular operating conditions.

The remaining factors that influence a fleet's selection of an engine lubricant are shown in Table 4. Of the 231 fleets reporting, 13.42 per cent follow their oil suppliers' recommendations exclusively, 3.03 per cent select on the basis of the recommendations made by the makers of the vehicles they are using, and 19.05 per cent indicate that not one recommendation but two, and in some cases three, are responsible for their final selection of an engine oil.

It should not be inferred that the low percentage of fleets influenced by truck makers' recommendations indicates low regard

# Heavy-Duty Oil Foremost Engine Lubricant in Fleet Service

## 29.74% use H-D oil exclusively, 27.58% use it for part of fleet

**Table 3**

| VOCATIONAL GROUPS | Total Number of Fleets Reporting | TYPES OF ENGINE OILS USED BY FLEETS: Regular (Per Cent) | Premium (Per Cent) | Heavy-Duty (Per Cent) | Regular and Premium (Per Cent) | Regular and Heavy-Duty (Per Cent) | Premium and Heavy-Duty (Per Cent) | Regular, Premium and Heavy-Duty (Per Cent) |
|---|---|---|---|---|---|---|---|---|
| COMMON CARRIER GROUP | | | | | | | | |
| Local and Over-the-Road | 42 | 14.29 | 14.29 | 30.95 | 2.37 | 16.67 | 21.43 | ..... |
| FOOD DISTRIBUTION GROUP | | | | | | | | |
| Bakeries, Dairies, Meats and Other Food Products | 46 | 17.39 | 17.39 | 34.79 | ..... | 13.04 | 17.39 | ..... |
| GOVERNMENT GROUP | | | | | | | | |
| State, County, Municipal, Federal | 59 | 28.81 | 15.26 | 28.81 | 3.39 | 13.56 | 6.78 | 3.39 |
| CONSTRUCTION GROUP | | | | | | | | |
| Builders, Quarries, Gravel | 6 | ..... | 16.67 | 33.33 | ..... | 16.67 | 33.33 | ..... |
| INDUSTRIAL GROUP | | | | | | | | |
| Local and Over-the-Road | 2 | ..... | ..... | 50.00 | ..... | 50.00 | ..... | ..... |
| PETROLEUM GROUP | | | | | | | | |
| Producers and Distributors | 9 | 22.22 | ..... | 44.45 | ..... | ..... | 22.22 | 11.11 |
| PUBLIC UTILITY GROUP | | | | | | | | |
| Gas, Power, Water and Telephone | 36 | 33.33 | 16.67 | 22.22 | 5.56 | 11.11 | 11.11 | ..... |
| RETAIL DELIVERY GROUP | | | | | | | | |
| (Other than Food) Dry Cleaning, Laundry, Newspaper, Coal and Ice, Department Stores, Beverage | 18 | 33.33 | 27.78 | 16.66 | 11.11 | ..... | 5.56 | 5.56 |
| TRUCK RENTAL GROUP | 5 | 60.00 | 20.00 | 20.00 | ..... | ..... | ..... | ..... |
| TRUCK AND BUS FLEETS, MIXED | 9 | 11.11 | 11.11 | 44.45 | ..... | ..... | 33.33 | ..... |
| TOTALS AND AVERAGE | 232 | 23.71 | 15.95 | 29.74 | 3.02 | 11.64 | 14.22 | 1.72 |

*Table 3. 69.40 per cent use one type of engine oil, of the required viscosity, for the entire fleet. Others use regular or medium oil for light trucks and passenger cars, and premium or heavy-duty oil for medium and heavy-duty vehicles*

for their judgment on engine lubrication. Most truck manufacturers defer such recommendations to oil suppliers who, being closer to the scene of operation, are in a better position to make specific recommendations.

Also, the influence of oil suppliers upon the final selection probably is greater than indicated in the table. Suppliers often will suggest that a fleet *test* a type of lubricant. If the fleet's experience is satisfactory, it may adopt that lubricant on the basis of successful experience.

### *Why Fleets Favor Premium or H-D Oils*

NOT all fleet operators are sold on the benefits claimed for premium and heavy-duty oils, especially since some automotive engineers, oil producers and suppliers have demonstrated that a straight-run, high quality regular engine oil can give highly satisfactory results under properly controlled conditions. Therefore, it was endeavored to determine what experience the Board of Experts had with premium and heavy-duty oils, and if their higher cost was justified by any special benefits.

Of the 236 Experts who participated in the Engine Lubrication Survey, 19.49 per cent had changed from regular to premium, and 47.46 per cent switched to heavy-duty oil. Almost all of these fleets found the premium and heavy-duty engine lubricants to be more beneficial than regular engine oil.

The principal benefits claimed will be found in Tables 5A and 5B. The one table shows benefits listed by fleets who changed from regular to premium oil, and the other the benefits attributed to the heavy-duty oil they are using. In both tables, the benefits claimed are tabulated percentwise, according to the number of times the particular advantages listed were mentioned.

Thus, of the fleets that changed from regular to premium oil, 67.39 per cent claimed that a reduction in piston ring sticking was one of the benefits obtained. An equal number gained in lower overall maintenance costs, 65.21 per cent found that valve and carbon jobs were reduced as a result of the change, 63.04 per cent experienced cleaner engines, 56.52 per cent obtained greater mileage between oil changes, and so on.

The table showing benefits attributed to the change to the heavy-duty type of engine oil shows that 90.18 per cent reported they were experiencing cleaner-running engines than normal with

# Fleets Buy Oil by Experience

## How the oil performs under individual operating conditions is major factor

**Table 4**

| VOCATIONAL GROUPS | Total Number of Fleets Reporting | (A) Own Choice Based on Experience (Per Cent) | (B) Oil Supplier's Recommendation (Per Cent) | (C) Truck Maker's Recommendation (Per Cent) | Combinations of A, B & C (Per Cent) |
|---|---|---|---|---|---|
| COMMON CARRIER GROUP | | | | | |
| Local and Over-the-Road | 42 | 71.43 | 16.67 | ..... | 11.90 |
| FOOD DISTRIBUTION GROUP | | | | | |
| Bakeries, Dairies, Meats and Other Food Products | 46 | 52.18 | 17.39 | 6.52 | 23.91 |
| GOVERNMENT GROUP | | | | | |
| State, County, Municipal, Federal | 57 | 68.42 | 7.02 | 3.51 | 21.05 |
| CONSTRUCTION GROUP | | | | | |
| Builders, Quarries, Gravel | 6 | 66.66 | ..... | 16.67 | 16.67 |
| INDUSTRIAL GROUP | | | | | |
| Local and Over-the-Road | 2 | 100.00 | ..... | ..... | ..... |
| PETROLEUM GROUP | | | | | |
| Producers and Distributors | 9 | 44.44 | 11.12 | ..... | 44.44 |
| PUBLIC UTILITY GROUP | | | | | |
| Gas, Power, Water and Telephone | 37 | 67.57 | 16.22 | 2.70 | 13 51 |
| RETAIL DELIVERY GROUP | | | | | |
| (Other than Food) Dry Cleaning, Laundry, Newspaper, Coal and Ice, Department Stores, Beverage | 18 | 61.11 | 22.22 | ..... | 16.67 |
| TRUCK RENTAL GROUP | 5 | 80.00 | 20.00 | ..... | ..... |
| TRUCK AND BUS FLEETS, MIXED | 9 | 66.67 | ..... | ..... | 33.33 |
| TOTALS AND AVERAGE | 231 | 64.50 | 13.42 | 3.03 | 19 05 |

*Table 4. When it comes to selecting an engine oil, fleet operators rely largely upon their experience with it before adopting it permanently, although oil suppliers' and truck manufacturers' recommendations are observed by quite a few*

the previous lubricant used, 76.79 per cent experienced less sticking of piston rings, 67.86 per cent claimed that the number of valve and carbon jobs were reduced by using the heavy-duty oil in their truck engines, 66.07 per cent indicated that the heavy-duty oil reduces carbon formation, 66.07 per cent indicated lower overall maintenance costs, and so on.

An interesting observation on the benefits claimed for these oils is that there is a great similarity. However, considering the fact that two of the three special properties contained in heavy-duty oils also are found in the premium type, a similarity in benefits is to be expected. But it should be noted that the principal difference between premium and heavy-duty oils stands out prominently in Table 5B. The detergent property of the heavy-duty oil resulted in a 90 per cent agreement among the fleets that a cleaner-running engine was obtained.

The main point to be gained from these tables is that there appear to be numerous benefits in using premium and heavy-duty engine oils, and that they apparently are worth the difference in cost over the regular types or 66.95 per cent of the Board of Experts wouldn't be using them today.

## Benefits Attributed to Change from Regular to Premium Oil

**67.39% find less ring sticking; equal number obtained lower maintenance costs; 65.21% claim fewer valve and carbon jobs**

**Table 5A**

| VOCATIONAL GROUPS | Total Number of Fleets Reporting | Less Sticking of Piston Rings (Per Cent) | Lower Overall Maintenance Costs (Per Cent) | Fewer Valve and Carbon Jobs (Per Cent) | Cleaner Engines (Per Cent) | Greater Mileage Between Oil Changes (Per Cent) | Reduced Carbon Formation (Per Cent) | More Miles per Quart of Oil (Per Cent) | Improved Gasoline Economy (Per Cent) | Other Benefits (Per Cent) |
|---|---|---|---|---|---|---|---|---|---|---|
| COMMON CARRIER GROUP | | | | | | | | | | |
| Local and Over-the-Road | 6 | 83.33 | 50.00 | 83.33 | 66.67 | 66.67 | 66.67 | 50.00 | 50.00 | ..... |
| FOOD DISTRIBUTION GROUP | | | | | | | | | | |
| Bakeries, Dairies, Meats and Other Food Products | 9 | 66.67 | 66.67 | 77.78 | 66.67 | 44.44 | 44.44 | 44.44 | 22.22 | 11.11 |
| GOVERNMENT GROUP | | | | | | | | | | |
| State, County, Municipal, Federal | 10 | 90.00 | 60.00 | 60.00 | 80.00 | 70.00 | 80.00 | 40.00 | 10.00 | ..... |
| CONSTRUCTION GROUP | | | | | | | | | | |
| Builders, Quarries, Gravel | 3 | 33.33 | 66.67 | ..... | 66.67 | 33.33 | 33.33 | ..... | ..... | 33.33 |
| INDUSTRIAL GROUP | | | | | | | | | | |
| Local and Over-the-Road | 0 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| PETROLEUM GROUP | | | | | | | | | | |
| Producers and Distributors | 2 | ..... | 100.00 | 50.00 | ..... | 50.00 | 50.00 | 100.00 | ..... | 50.00 |
| PUBLIC UTILITY GROUP | | | | | | | | | | |
| Gas, Power, Water and Telephone | 8 | 37.50 | 75.00 | 62.50 | 62.50 | 50.00 | 37.50 | 37.50 | 12.50 | 25.00 |
| RETAIL DELIVERY GROUP | | | | | | | | | | |
| (Other than Food) Dry Cleaning, Laundry, Newspaper, Coal and Ice, Department Stores, Beverage | 5 | 80.00 | 60.00 | 80.00 | 40.00 | 60.00 | 60.00 | 60.00 | 40.00 | 20.00 |
| TRUCK RENTAL GROUP | 0 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| TRUCK AND BUS FLEETS, MIXED | 3 | 100.00 | 100.00 | 66.67 | 66.67 | 66.67 | 33.33 | 66.67 | 66.67 | ..... |
| TOTALS AND AVERAGE | 46 | 67.39 | 67.39 | 65.21 | 63.04 | 56.52 | 54.35 | 45.65 | 23.91 | 13.04 |

## Benefits Attributed to Change from Regular to H-D Oil

**90.81% claim cleaner lubrication systems; 76.79% find less ring sticking; 67.86% experience fewer valve and carbon jobs**

**Table 5B**

| VOCATIONAL GROUPS | Total Number of Fleets Reporting | Cleaner Engines (Per Cent) | Less Sticking of Piston Rings (Per Cent) | Fewer Valve and Carbon Jobs (Per Cent) | Reduced Carbon Formation (Per Cent) | Lower Overall Maintenance Costs (Per Cent) | Greater Mileage Between Oil Changes (Per Cent) | More Miles per Quart of Oil (Per Cent) | Improved Gasoline Economy (Per Cent) | Other Benefits (Per Cent) |
|---|---|---|---|---|---|---|---|---|---|---|
| COMMON CARRIER GROUP | | | | | | | | | | |
| Local and Over-the-Road | 22 | 90.91 | 72.73 | 68.18 | 63.64 | 40.91 | 40.91 | 36.36 | 27.27 | 40.91 |
| FOOD DISTRIBUTION GROUP | | | | | | | | | | |
| Bakeries, Dairies, Meats and Other Food Products | 24 | 91.67 | 70.83 | 70.83 | 70.83 | 75.00 | 29.17 | 33.33 | 20.83 | 12.50 |
| GOVERNMENT GROUP | | | | | | | | | | |
| State, County, Municipal, Federal | 27 | 85.19 | 88.89 | 70.37 | 74.07 | 77.78 | 22.22 | 22.22 | 29.63 | ..... |
| CONSTRUCTION GROUP | | | | | | | | | | |
| Builders, Quarries, Gravel | 4 | 100.00 | 75.00 | 75.00 | 50.00 | 100.00 | 25.00 | ..... | 25.00 | ..... |
| INDUSTRIAL GROUP | | | | | | | | | | |
| Local and Over-the-Road | 2 | 100.00 | 100.00 | 100.00 | ..... | 50.00 | 50.00 | ..... | ..... | ..... |
| PETROLEUM GROUP | | | | | | | | | | |
| Producers and Distributors | 6 | 100.00 | 83.33 | 83.33 | 66.67 | 83.33 | ..... | ..... | 33.33 | 33.33 |
| PUBLIC UTILITY GROUP | | | | | | | | | | |
| Gas, Power, Water and Telephone | 5 | 86.67 | 66.67 | 46.67 | 66.67 | 60.00 | 20.00 | 20.00 | 6.67 | ..... |
| RETAIL DELIVERY GROUP | | | | | | | | | | |
| (Other than Food) Dry Cleaning, Laundry, Newspaper, Coal and Ice, Department Stores, Beverage | 5 | 100.00 | 80.00 | 80.00 | 80.00 | 60.00 | ..... | 40.00 | 40.00 | ..... |
| TRUCK RENTAL GROUP | 2 | 100.00 | 100.00 | 50.00 | 100.00 | 50.00 | ..... | ..... | ..... | 50.00 |
| TRUCK AND BUS FLEETS, MIXED | 5 | 80.00 | 60.00 | 80.00 | 20.00 | 60.00 | 60.00 | 60.00 | 40.00 | ..... |
| TOTALS AND AVERAGE | 112 | 90.18 | 76.79 | 67.86 | 66.07 | 66.07 | 26.79 | 26.79 | 24.11 | 13.39 |

*Table 5A and 5B. There is a noticeable similarity of benefits claimed for both premium and heavy-duty oils. Considering the fact that two of the three special properties of the heavy-duty oils also are found in premium oils, similarity of benefits is to be expected. Some of "Other Benefits" mentioned include "Longer bearing life," "Longer engine life"*

## A Trouble Shooter Eyes Engine

# COMPRESSION LOSSES

**A review of factors affecting poor compression, including premature piston, ring, cylinder, valve wear; operating conditions; overhaul methods**



*by M. K. SIMKINS*
**Technical Editor**
**Commercial Car Journal**

WHEN compression losses go hand in hand with excessive operating costs, so it is obvious to the progressive fleetman that a low reading on the vacuum gage will result in a low reading on the credit side of the ledger when operating expenses are figured. The significance of a low compression reading is elementary to any mechanic; the causes are sometimes complicated. To tell a fleet why it is losing compression in its engines is far beyond the scope of this article. It is intended, rather, to establish common causes and effects of premature wear, breakage, carbon deposits, inaccurate overhaul methods and operating factors contributing to compression losses and inefficient vehicle operation. The causes will suggest the cures, while a study of the check list should provide the mechanic with a systematic guide to locating troubles, and the operator with practical pointers on how to improve operating efficiency.

### Indications of Failures

POOR engine performance is the first hint of unsatisfactory compression. Complaints of loss of power, poor acceleration, high oil consumption would be logical indications of this condition. In most cases this will be accompanied by oil pumping, blow-by and a smoking exhaust. Compression blow-by can be detected by noting the existence of oil fumes in the engine oil breather, filler cap or any opening to the crankcase, while evidence of exhaust smoking can be checked by revving the engine to a speed equivalent of 40 miles per hour and looking for dense, gray-blue smoke at the exhaust. The mechanic should be cautious, however, in blaming poor performance on compression troubles until he has made a thorough check of spark, timing, carburetion and operating factors, accompanied by a vacuum reading.

Certain engine sounds are characteristic of failures in the power system of the engine, although here again the mechanic should be cautious in his diagnosis. Unequal compression between cylinders can often be detected by listening to the exhaust with the engine running at a speed of 20 miles per hour. Missing at high speed may be due to unequal compression between cylinders, incorrect valve timing or weak or broken valve springs. It could also be due to a sticking valve or an improperly seating valve caused by warpage, burning or cracks in the head or seat. A miss on acceleration can be caused by weak valve springs or excessive carbon deposits.

Backfiring through the carburetor can be caused by improperly seat-

(TURN TO NEXT PAGE, PLEASE)

# . . . Compression Losses

(Continued from Page 53)

ing intake valves or incorrect valve timing, while spark knock (pre-ignition or detonation) can point to such valve troubles as incorrect width of seat, insufficient tappet clearance, use of wrong type valves, or thin edged valves. This again can be caused by deposits in the combustion chamber, a condition which will eventually affect compression efficiency.

Noisy valve action may be an indication of improperly seating valves, a condition which will cut compression efficiency materially. If adjustment does not eliminate the noise, it may be due to excessive valve stem-to-guide clearance, weak valve springs, warped heads or excessive clearance of push rods in guides. Defective seating of the intake valve may be detected by listening for a hissing sound at the crankcase breather, while bad exhaust valves can be found by listening at the exhaust pipe.

Piston ring noises can generally be detected as a click, snap or sharp rattle on acceleration. Such conditions may be the result of a broken ring, worn ring land, broken or warped ring land, insufficient ring tension or inadequate ring lubrication. A popping noise at idle may be caused by worn, distorted or broken ring lands. This noise can be heard very plainly if the breather cap is removed. It appears to be coming out of the breather or oil filler pipe, and is aggravated to a large extent by failure of the lubrication system to throw sufficient quantity of oil into the cylinders.

The most common piston noise is denoted as a slap arising from a rocking motion of the piston when it does not fit properly. Piston slap is usually a hollow, muffled, bell-like sound and will occur in a cold engine or upon heavy pulling. Causes of this condition can be listed as: excessive piston-to-cylinder bore clearance, eccentric or tapered cylinders, insufficient piston pin clearance, connecting rod misalignment, collapsed skirt, or interference with the gasket, the top or bottom ridge of the cylinder. It may be due to growth of the piston head caused by the heating and cooling of the piston.

## Use of Gages

WHILE the previous checks will help to locate the offending spots, it is imperative that the mechanic use the vacuum and compression gage to further check on low compression before tearing the engine down. Vacuum gage readings will do much to guide the mechanic in proper steps for service.

An efficient engine should give a vacuum reading of 18 to 21 in. A slight flutter of the hand, however, will indicate that the engine does not have uniform power impulses. This can be due to improper valve action, improper valve timing, wrong ignition timing, intake manifold leaks or defective carburetion. A low vacuum reading could be caused by defective valves, worn rings, worn pistons, scored cylinder walls, etc.

After carburetion and timing have been adjusted and other contributing factors taken into consideration, the mechanic will be able to use the vacuum gage as a guide to compression failures.

Setting of the valves can be checked with the vacuum gage. The gage reading should be noted at idle, and each cylinder is shorted out with a screwdriver. If the valves are properly set, the gage will drop one division and snap back quickly to the original reading as soon as the short is removed. If the valve is leaking or adjusted too close, there will be no change in the gage when the plug is shorted out.

To test for worn piston rings the engine is accelerated quickly. The vacuum gage needle should jump at least five points higher and drop back to two points above zero. If it drops back to zero, it is a sign that the pistons or rings are leaking compression or that the oil is diluted. The same condition would be indicated if the gage hand remained steady at idling speed, but the reading was lower than for a normal engine.

If the valve guides or the manifold heat riser is leaking, the vacuum reading will fluctuate wildly from 5 to 20. To further test, oil is poured over the intake valve guides and the reading is noted. If the reading improves, it indicates worn valve guides.

When the throttle is opened and closed rapidly, an efficient engine will show a fluctuation on the vacuum gage from 2 to 25 in., and it will settle back to normal reading when the engine is returned to idle speed. With a drop of five points or less, it is an indication of a leaky intake manifold or carburetor gasket. A very irregular drop will indicate a leaky head gasket. A leaky head gasket between cylinders will cause the gage to float regularly between 5 and 19 in. If the reading is normal at first, drops to zero and then builds up slowly or in steps, to about 16, it is an indication of a restricted exhaust or choked muffler, all factors contributing to inefficient compression.

With a sticking valve, the gage hand will drop regularly several points. This condition will also exist if the valves are tight, gummy, or the valve heads chipped or seats warped.

With late timing of the valves, the gage hand will read from 10 to 14 and will remain steady, although in cases where late valve timing is indicated, it is also wise to check for late ignition timing. Weak valve springs are indicated when the engine is accelerated and the gage hand fluctuates from 10 to 22, the fluctuation becoming greater as the speed increases. With leaky exhaust valves, the gage hand will drop approximately two points each time the valve is supposed to close. If the valve guides are loose, the gage hand will show fast oscillation between 14 and 20 in.

Supplementing these tests, a compression gage should be used. During this test the engine should be at normal operating temperature, the throttle should be wide open and each cylinder test should be conducted with the same number of revolutions of the engine.

All cylinders should be about equal in compression, with 6 lb. variation permissible. If one cylinder reading is low, a small amount of oil will be squirted into the spark plug hole and the reading taken again. If there is a considerable increase in pressure

10 lb. or more), it is an indication of leaking piston rings. Next a small amount of oil will be put into the intake manifold (through the windshield wiper connection). If the compression increases considerably after the oil is applied, it is an indication of leaky intake valves or weak valve springs. A low but even compression between two adjoining cylinders generally indicates a head gasket leak.

If the compression gage is the type having an air fitting, compressed air can be applied to the cylinder with the piston at top dead center on the compression stroke. If a leak is discernible (hissing inside engine) it indicates improperly seating valves.

### Piston Ring Failures

AFTER a diagnosis and location of the cause of low compression is found, it will be advantageous for the mechanic to learn the cause of the trouble. It is to be noted that causes and effects of any malfunctioning are not always absolute, but common reasons for power section failures follow, for the guidance of the mechanic.

Piston rings sometimes just naturally break from fatigue, but in a far greater number of cases it is due to improper assembly, service or operation. Use of a wrong type ring for certain installations may cause early breakage. Fitting of rings too tightly in the grooves may result in distortion and breaking of the ring. Worn ring grooves, either laterally or in depth may account for cocking of the ring in cylinder. Installing the ring with insufficient ring tension or too little gap clearance may result in this type of failure, while use of undersize pistons will certainly result in premature breakdowns. Leaving the top ridge in the cylinder may result in the top ring striking the ridge, fracture the ring lands at the root or breakage of the ring. Failure to remove waves and ridges in the cylinder wall will result sometimes in excess flexing of the rings and early failure. If the ring is twisted and in a distorted position

(TURN TO NEXT PAGE, PLEASE)

## COMPRESSION LOSS CHECK LIST

### I. Indication of Failure

***A. From engine performance***

Loss of power
Poor acceleration
Oil pumping—blow-by
Smoking exhaust
High oil consumption
Diluted engine oil

***B. From engine sounds***

Clicking—broken ring or land
Knocking — piston slap or broken piston
Hissing at breather—intake valve
Hissing at exhaust—exhaust valve
Regular hiss—blown gasket
Backfiring through carburetion—valve
Backfiring on acceleration—valve
Irregular engine miss
High speed missing
Missing on acceleration

***C. With compression gage***

Low compression reading
Low reading—two cylinders
Leak past valves—compressed air test

***D. With vacuum gage***

Low vacuum gage reading
Fluttering of needle
Irregular drop in vacuum

### II. Piston Ring Conditions

***A. Broken rings***

Wrong type, size ring
Undersize pistons
Ring striking top ridge
Worn ring grooves
Broken ring lands
Insufficient ring tension
Insufficient gap clearance
Excessive side clearance in ring groove
Scored, wavy cylinder walls
Overheating

***B. Ring sticking***

Dirty, contaminated oil
Incorrect type of oil
Poor grade of oil or fuel
Compression blow-by
Incomplete combustion
Engine detonation
Inadequate crankcase ventilation
Improper engine cooling
Lugging engine
Excessive engine idle
Insufficient ring land side clearance

***C. Ring noises***

Broken piston ring
Worn ring grooves
Lack of inner ring tension
Top ring striking cylinder ridge
Wavy cylinder walls
Broken ring lands
Undersize pistons

### III. Piston Failures

***A. Piston noises***

Excessive piston to bore clearance
Eccentric or tapered cylinders
Carbon accumulations in head
Collapsed piston skirt
Broken piston, skirt, ring land
Insufficient clearance at top ring land

***B. Piston breakage***

Undersize pistons
Eccentric or tapered cylinders
Warped cylinder barrels
Inadequate lubrication
Misaligned connecting rods
Overspeeding and overloading
Engine overheating
Pre-ignition

### IV. Cylinder Failures

***A. Excessive wear, scoring***

Too harsh type rings
Inadequate lubrication
Contaminated or poor oil
Improper cylinder finish
Sharp edge left on piston skirt
Insufficient ring gap clearance
Incomplete combustion
Tight piston pins
Misaligned connecting rods, pins
Distorted block, crankshaft
Cylinders bored out of line

***B. Warpage***

Engine overheating
Steam pockets in block
Improper head tightening
Improper sleeve installation
Deposits between dry sleeve and bore

### V. Valve Seating Troubles

Burned valves and seats
Deposits under head and stem
Warped heads and stems
Cracked valves and seats
Insufficient valve-tappet clearance
Broken, weak valve springs
Warped or binding guides
Improper grinding operations
Improper valve timing
Worn timing gears or chain

### VI. Excessive Wear

***A. Lubrication failures***

Too harsh piston rings
Insufficient ring gap clearance
Lands not properly relieved
Worn con-rods, main bearings

***B. Contaminated oil***

Infrequent oil changes
Failure to service filters
Abrasives left in engine
Inadequate crankcase ventilation
Incomplete combustion
Overheating or overcooling
Excessive wear of parts
Poor grade of fuel

***C. Failure of oil pressure***

Broken oil pump drive
Worn drive gears
Plugged oil pump screen, by-pass
Clogged intake line to pump
Broken relief valve spring
Worn connecting rods, bearings
Low oil level
Diluted oil

***D. Overhaul methods***

Dirt entering at overhaul
Improper honing and boring
Use of wrong type, wrong size rings
Use of incorrect size pistons
Improperly fitted rings
Careless measurements
Failure to align rods

***E. Operational factors***

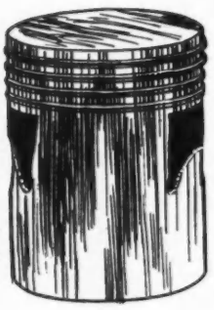
Idling a newly rebuilt engine
Overspeeding a new ring job
Lugging on hills
Improper engine warm-up
Overheating the engine

# . . . Compression Losses

(Continued from Page 55)

due to the mechanic's failure to clean the carbon from the groove, it cannot flex fast enough to maintain cylinder wall contact and does not transmit the heat of the piston to the cylinder wall, allowing the piston to overheat. The result is excessive blow-by and sticking rings. New rings installed in warped ring grooves will allow for this condition as well. Ring lands should be inspected for burrs that would prevent the rings from operating freely in the grooves. Not only will excessive side clearance cause oil pumping, but the extra freedom give the ring will allow for rapid pounding out of the groove, ring breakage and piston failure.

### Piston Failures



PISTON failures, while not as common as ring and cylinder failures as a factor in compression loss, nevertheless come in for their share of responsibility.

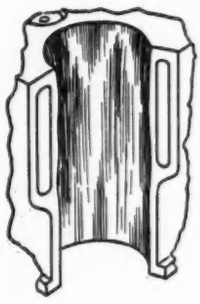
Inspection of the piston may show up the cause of the compression loss when the engine is torn down. Gouged or shiny ring lands may indicate that the head of the piston has been contracting the cylinder wall due to piston slap or misalignment. Marks appearing on the thrust side of the piston indicate it has been slapping. If the lands are shiny on the pin hole side of the piston, it may indicate that the rod is bent or that the crankshaft or cylinders are out of correct alignment. Light tapping of the piston with a hammer to see if it rings true will show up such defects or cracks.

Pistons should be measured with accurate instruments, and skirt collapse will require a new piston, a skirt expander or resizing of the piston. Piston skirt clearance is extremely important as the skirt is responsible for scraping much of the oil from the cylinder walls. Excessive piston skirt clearance will cause piston slap, while piston slapping will result in ring flutter. The result is blow-by and high oil consumption, resulting in compression losses.

Ring grooves should be cleaned and checked before installation of new rings. A film of carbon on the sides of a groove has the effect of reducing the normal side clearance necessary between ring and groove—resulting in eventual ring sticking. If carbon is left in the bottom of the groove, the ring will protrude out and give a false fit or result in ring twist. Worn or bell-mouthed ring grooves are the cause of pistons burning, broken rings, sticking rings and cylinder wall wear.

Improper piston fit or the use of standard pistons in oversize bores is a common cause of breakage and failures. A piston that rocks soon wears the compression rings barrel faced so that compression failures result. In addition, the rocking of the piston causes a scuffing in the cylinder due to the pounding as well as to the poor heat dissipating ability of a wide clearance.

### Cylinder Wear



RAPID cylinder wear can be caused by operating conditions, improper overhaul methods or lubrication failures and related conditions. Strangely enough, improper lubrication can be the result of any of these conditions. Aside from low oil pressure and a low oil level, the quality of the oil itself should be considered as a factor in premature wear. Use of too harsh type rings or improper fitting of the rings will result in scoring of the cylinder with resultant compression losses. Insufficient ring gap clearance may result in inadequate lubrication of the cylinder walls since the rings scrape down all lubrication.

Sometimes the cylinders are out of line, and while most rings will take up for some misalignment, anything over .003 in. may be responsible for improper ring seating and premature cylinder year. If the connecting rods are not properly aligned in the pistons, the pistons will be cocked in the cylinder, wearing more on one side than the other. Misalignment permits the piston to operate so that the ring faces will not be held parallel with the surface of the cylinder walls. This wears away the upper and lower portions of the ring faces and leaves the middle of the ring face projecting beyond the edge, thus destroying the ability to scrape down the oil. Misalignment of the piston pin holes will result in a similar condition, while a tight piston pin fit will allow the piston to stay in a cocked position as it is pushed up the cylinder barrel, causing scoring and premature failure.

The most frequent causes of warpage of the cylinder barrel is a defective cooling system. Deposits found between the dry sleeve and the bore in the cylinder block cause distortion. A clogged cooling system may allow for steam pockets in the block or defective cooling of the valves and cylinders, resulting in block warpage, valve warpage and cylinder distortion. Improper sleeve installation is also a frequent cause of block distortion. Hot spots will prevent the rings from maintaining contact with the cylinder wall and will result in oil pumping and blow-by.

Some cases of blow-by and oil pumping can be traced directly to improper tightening of the cylinder head bolts. If a torque wrench is not used for this procedure, the head and block may be distorted to a point where complete engine reconditioning may be necessary.

Manufacturers insist that wavy cylinder walls contribute more to a set of piston ring failures than a large amount of taper or out-of-round. A cooling system clogged with rust and sludge may allow passageways to become clogged, forming hot spots in the block. This results in uneven cylinder block expansion and cylinder distortion in the form of wavy cylinder walls. Cylinder surfaces should be honed whether or not they are rebored. If scuffed surface, wavy walls or glaze

( TURN TO PAGE 166, PLEASE)

# DETROIT DISPATCH

**Ford to Feature New Engines**
**. . . but No Valve-in-Heads Yet**
**H-C Engine Pushed**

**Nash Trucks for Export**
**Show Doubtful in '48**
**No Automatics for "Big 3"**

*by LEN WESTRATE*
**CCJ Detroit News Editor**

## Ford to Feature Engines

There is considerable buzzing going on around Detroit about those new model trucks Ford is planning for introduction late this year. Nothing official yet, but it is said that the trucks will have the new line of engines the company has been developing for its passenger car line. Ford currently is engineering a new V-8 for each of its three-passenger cars and is kicking up the horsepower of the six to around 100. Which engine will go into which model truck hasn't leaked, however. The company has indicated that there is no basis for the report that the trucks will have engines different from those used in cars. Manufacturing economies are too important for any such action, although there may be minor modifications in such features as manifolding and bearings.

## —But No Valve-in-Heads Yet

In answer to a CCJ inquiry, a Ford spokesman has refuted a report that Ford may adopt a valve-in-head six engine in the near future. He confirmed that the company has such an engine under test in its engineering lab, but said that it is only one of many types being studied constantly. All companies are becoming more interested in the overhead-valve type of engine, since that is the valve arrangement required in construction of high compression engines because of the restricted area in the combustion chamber.

## H-C Engine Pushed

Two major truck builders are said to be pushing development of the high compression engine for early adoption. One consideration is that fleet operators with their bulk buying opportunities probably could get the high octane fuel required before it is generally available to the public in quantity. Incidentally, it is reported that further tests of G.M. since the first report on the high compression engine in June have shown that performance figures given were on the conservative side. At that time, an increase of about 30 to 35 per cent in efficiency over the conventional engine was cited.

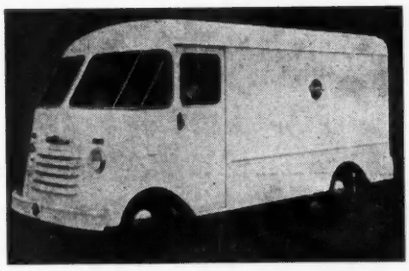
## Nash Trucks for Export

Nash will start production of its long-awaited truck line sometime this Fall, but for the export market only. In order to conserve critically short sheet steel, the company will build and send abroad knocked-down chassis with cowl, but without cab, body, or rear fenders. Production for the American market will be deferred until sheet steel is available in adequate quantities. During World War I, Nash was a leading truck manufacturer, but dropped out of the field in 1929. Unconfirmed reports say that Plymouth and Packard are considering entry into the truck business, but this seems doubtful at the present.

## Show Doubtful in '48

There certainly will be no national automobile show this year, and as yet there are no definite plans for one in 1948. With materials short and the demand for cars nothing short of phenomenal, there is little reason to stage a show, which normally is calculated to whet appetites for new cars. However, any change in the picture that might indicate a balance of supply and demand probably would bring about a quick dustihg off of plans for a show.

## Olson Kurb-Side



**The J. B. E. Olson Corp. of Brooklyn, N. Y. introduced its new all aluminum Kurb-Side models in New York, Sept. 17. Manufactured for Olson by Gruman Aircraft Engineering Corp., they are available in two sizes for ½ and ¾-ton Chevrolet chassis. Full details will be published in November issue**

## Ultra-Modern Pickup

Hudson is planning to go ultra-modern with its cab design for its new model pickup truck, scheduled for introduction late this year. The company says it will carry into its pickup cab the same bold advance in styling it plans for its passenger car—namely, low, wide, sweeping lines. It also is reported that Hudson is considering extension of its truck line into the ton and ton-and-a-half field. Assembly lines went down Sept. 19 for the complete model changeover. Features of the new Hudson: Lowest center of gravity of any current American car; overall height of 5 ft. from ground to roof; unit frame construction; compound curved windshield; new six engine with more horsepower than any other six now being made; improved eight engine and 63-in. wide rear seat located ahead of rear wheels. Entrance into the car is made by steping down into it, rather than by climbing up.

## No Automatics for "Big 3"

It is pretty sure now that none of the lower priced cars will offer an automatic transmission when 1948 models are announced. High costs and the difficulty of manufacturing in sufficient volume would forestall that possibility even if a satisfactory unit were developed. However, there seems to be a good likelihood that Ford may have an overdrive unit available as optional equipment. If that happens, Chevrolet and Plymouth probably will follow suit. It has been confirmed, however, that Pontiac will offer the Hydramatic as optional with at least part of its production in 1948.

## Studebaker Style Note

Studebaker is reported planning to abandon the separate rear fender in favor of the integral body construction in which the rear fender is part of the rear quarter body panel. Kaiser-Frazer and Packard al-

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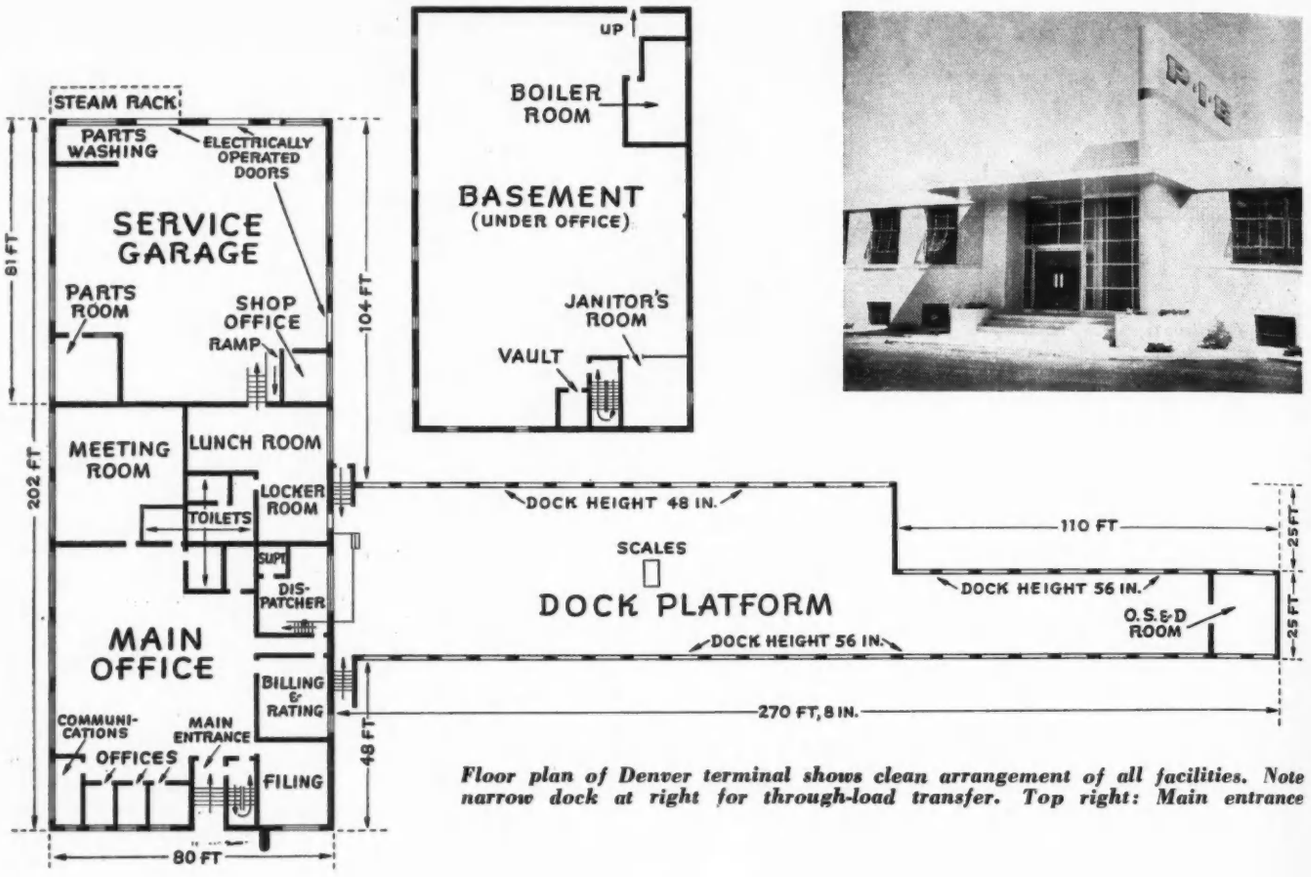






*Floor plan of Denver terminal shows clean arrangement of all facilities. Note narrow dock at right for through-load transfer. Top right: Main entrance*

# Division Point Terminal

## P.I.E.'s Denver terminal features motorized conveyor for cargo transfer between eastern and western trailers

AN OUTSTANDING division point terminal at Denver, Colo., has just been completed by Pacific Intermountain Express. Constructed on a 12-acre site at a cost to date of approximately $450,000, it is designed not only to handle local terminal needs but also as an important stop-over point on the company's east-west runs.

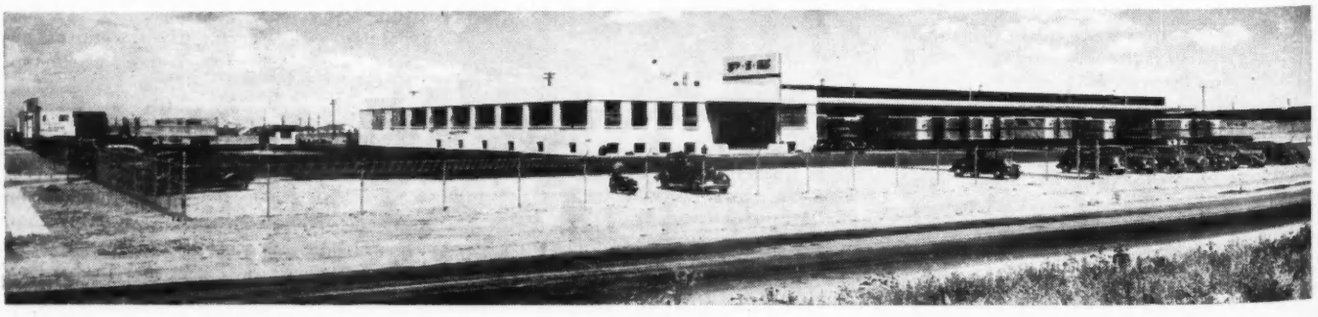
An unusual feature in connection with this latter function is the narrow dock section which will be noted at the extreme right side of the accompanying lay-out plan. Here through loads are transferred across the dock from large western trailers to smaller eastern trailers by motorized conveyors. All other freight is handled by fork lift trucks.

From a maintenance standpoint the relatively small shop is designed for servicing only the Denver-Kansas City equipment.

It is contemplated, however, that in the near future additional structures will be built to house the company's general shops and general headquarters offices, both of which

(TURN TO PAGE 114, PLEASE)

*General view of the new P.I.E. terminal building at Denver reveals its excellent eye-appeal as well as functional utility*



*Below. Union Electric's compact General Electric transmitter is 193 ft above Mississippi, has 200-ft. aerial*

*Right: Driver uses head-set in sedan delivery. Transmitter and receiver are on deck behind the driver's seat*


**Fleet's experience points out bugs and bonuses from which others can benefit**

**by L. H. HOUCK**

# 30-Month Test with 2-WAY RADIO

*Below. Arrow points to special compartment in panel truck for radio equipment*

TWO AND A HALF years' experience with two-way radio systems on trucks of Union Electric Co., St. Louis, Mo., adds up to the total that the company wants more.

Aside from the beneficial results of being able to contact line trucks, emergency trucks and meter men regardless of where they are, Union Electric obtained a surprise dividend in good public relations benefits.

This surprise dividend might easily come to other truck lines using two-way radio. Union Electric now receives hundreds of letters praising their emergency service and all can be traced to the prompt service rendered by emergency cars which have been dispatched to the scene of trouble by radio dispatching.

The prize letter is from a man who attributes supernatural powers to the emergency crew who happened to be in front of the customer's house when they got the radio call. They rang his doorbell to give him service before he had the receiver well hung up.

### Maintenance Costs Down

COST of equipment is up slightly, according to company officials, from what it was when they first installed two-way radio equipment, but the cost of service, repairs and upkeep, is definitely way down. This is due to refinements in installation, better familiarity with physical requirements, and good locations inside trucks where they are trouble-free and remote from chance of accidental damage from handling tools. Many of these crews work swiftly in an emergency. They go to fires, storm damage centers and put in a fuse at the cottage next door. Equipment locations vulnerable to being bumped by tools wouldn't last long.

On the basis of its first two and a half years' experience, Union Electric will expand its two-way radio system and continue to improve it. It is likely that all company cars and trucks will eventually be equipped. They have proven to their own satisfaction that both light and heavy-duty trucks, regardless of their type of work, can profitably use the two-way FM radio to good advantage.

While invaluable in directing equipment in actual emergencies such as flood and fire, the radio has proven its great value in every-day business. Traffic of company trucks and care is expedited, crews get more done with less expenditure of energy, more territory can be covered. The intangible dividend was the great improvement in public relations.

Here is the history of the installa-

(TURN TO PAGE 104, PLEASE)


USE POSTCARD — NO STAMP NEEDED

# PUBLICATIONS

**A selected list of the latest literature—catalogs, pamphlets, charts—chosen to help fleetmen improve operation and maintenance**

## L128. Compressed Air

"There's no mystery about compressed air," says the author of this 16-page publication on compressor data, and he proceeds to outline in easily-read style the fundamentals of air compressors. Starting with the principles of operation of a bicycle pump, the author takes the reader through the various procedures of compressing air mechanically to explain clearly just how the compressor operates.

Another section of the booklet is devoted to air compressor installation. Practical facts on location, mounting, wiring, lubrication, connections and belt adjustments will be invaluable to the service man.

In addition, a comprehensive list of instructions for proper installation and care of the compressor will be useful to any fleet shop. Recommendations for weekly and monthly inspections will insure top performance of any compressor. Among his list of DON'TS in operation are factors which may be of money-saving value to the fleet operator.

Finally, the author takes up a list of common compressor troubles such as: Motor will not start; Motor will not come up to speed; Overload protection trips out; Burned out motor; Inefficient operation and other malfunctioning and gives appropriate remedies for each trouble.

This may well become the compressor manual for the fleet shop. It has been prepared to help the operator improve the life and efficiency of his machines. Write L128 on the free postcard and add it to your files.

## L129. Driver's Guide

A concise treatment of the fundamental rules of safe driving especially prepared for truck and bus drivers is now available to the fleet field in the form of a 40-page, pocket size booklet entitled "The Commercial Vehicles Drivers' Guide Book."

Prepared to assist the driver maintain the high standards of his profession, the booklet is intended to serve as a refresher on some rules of the road that the driver needs but may sometimes neglect.

Divided into four sections, the guide book discusses the attitude and physical condition of drivers, traffic laws and regulations, motor vehicle equipment, and finally, traffic signs, signals and markings.

Within these pages the reader will find such topics as Good Rules to Follow in Right of Way Decisions; Conditions Which Should Govern Speed; Ways to Prevent Skids; Proper Loading and Proper Load Distribution, to name a few. Another section shows what to do in case of an accident, while another division outlines factors essential to safe driving with regard to vehicle equipment. A table of maximum safe stopping distances will be valuable to have on hand.

This booklet is a training course in itself. It should be added to the required reading list for drivers in every fleet. Write L129 on the free postcard for a copy.

## L130. Driving Booklet

Here is a booklet designed for the vehicle driver and offering 196 practical suggestions on all phases of driving. It should be kept on file in every fleet and used as a reading "must" for new as well as seasoned drivers. While many of the tips may not be new to the old-timer, seeing them in print may help him recall things he had forgotten—or possibly neglected in driving.

One of the most interesting parts of the guide takes up gasoline consumption and shows the reader 20 factors responsible for poor economy. While ten of the outlined points depend upon the vehicle and adjustments, the other ten are directly the responsibility of the driver.

The intelligent use of instruments is the subject of another section, and experience has shown that a review of these suggestions might preclude many road failures, when drivers take proper engine operation for granted.

The guide goes on to discuss proper lubrication, crankcase ventilation, as well as various adjustments and factors responsible for satisfactory performance and long vehicle life, while the tips on stretching tire mileage will be valuable in any conservation program.

Much of the booklet is devoted to driving tips, stressing safety, consideration for other vehicles and skill in handling the vehicle. The section on road signs will be found valuable in training drivers.

This booklet has proved of value to all connected with transportation. The newest edition is just off the press and is yours for the writing of L130 on the free postcard.

## L131. Brake Manual

Available now to the fleet shop in the seventh edition is a new brake service manual designed to provide complete repair and adjustment data for nearly every type and model of brake.

With sixty pages filled wtih practical information every shop needs, the booklet is printed in easily-read form, complete with detailed photographs and drawings to supplement the text.

Beginning with a comprehensive trouble shooting chart the manual shows common troubles of five popular types of brakes and gives appropriate remedial measures. The chart is arranged for easy references by the mechanic; it can be taken to the bench or used in the truck to save valuable time in diagnosing such failures.

Part of the booklet is devoted to the basic fundamentals of brake service, thus providing the reader with pertinent technical background. Hydraulic brakes, brake drums, principles of balancing brakes are discussed in detail. Then the booklet breaks down the instructions to show popular breaking systems and their operation. Included are practical hints for maintenance of the air brake systems.

There is no attempt to advertise in this manual. It has been compiled primarily to aid the fleetman in securing better brake service. It would provide an ideal text book for the fleet's training program. Write L131 on the free postcard for a copy.

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# NEW PRODUCTS

**The newest in replacement parts, accessories, shop equipment, supplies—illustrated and described in brief for the fleetman**

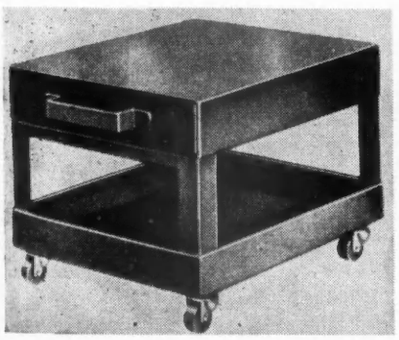
## P95. Steering Gear Lube

A new type of steering gear lubricant has recently been announced by Bear Mfg. Co., Rock Island, Ill. The new product, called Bear-Lube, is not affected by temperature changes and will retain its base for smooth, easy operation for an indefinite period of time, the manufacturer states.

**Use Free Postcard For More Details.**

## P96. Mechanic's Scooter

The H. D. Campbell Co., of Rochelle, Ill., recently introduced a newly designed four wheeled mechanic's scooter for use in garages.

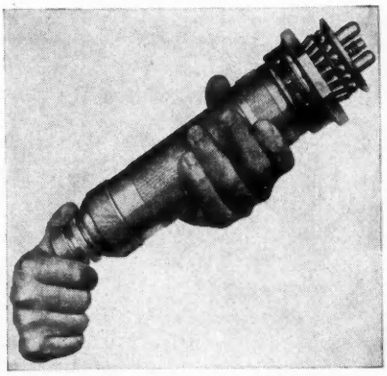


The Handy Andy Scooter is designed to save tired legs and back while repairing wheels, painting or scrubbing floors or low walls. It is a four wheeled, steel scooter finished in metalic grey, with convenient shelf at bottom for tools. Dimensions: 11 in. high, 10 in. wide, 12 in. long. It weighs 10 lb.

***Use Free Postcard For More Details.***

## P97. Bearing Packer

The Lincoln Engineering Co., St. Louis, Mo., is now manufacturing a new, improved design wheel bearing packer. The Kleen-Pak Wheel Bearing Packer is said to provide cleaner, faster, positive lubrication. It will service roller or ball type bearings on all makes of passenger cars and light trucks. When packing roller-type bearings, the bore of the bearing and retaining cone of packer head is left free of lubricant, eliminating waste and mess.



The unit is manually controlled, screw-type operated and does not require extra guns or attachments. Quickly filled by suction, it holds ¾ lb, enough lubricant to pack 40 average size bearings. Compact, fully portable—packs bearings right at the wheel.

***Use Free Postcard For More Details.***

## P98. Performance Gage

An inexpensive new gage for installation in gasoline powered vehicles of all types, manufactured by the Snow Plastics Corp., Chicago, makes possible a constant check on overall engine performance by indicating actual gasoline mileage under any driving conditions.

In addition to keeping the driver continually informed concerning the rate of fuel consumption of his car per mile traveled, the gage is said to contribute to fuel economy.

Fittings are supplied to connect the gage into the windshield wiper system and the gage itself mounts on the windshield frame by means of screws.

***Use Free Postcard for More Details.***

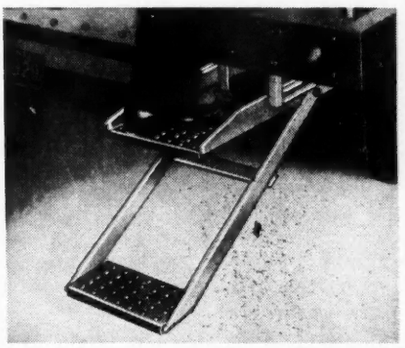
## P99. Sub-Zero Motor Oil

A new cold weather motor oil engineered to give dependable lubricating performance at temperatures as low as 30 below zero has been announced by the Amalie Division of L. Sonneborn Sons, Inc., New York. Outstanding feature of the product, Amalie Suz-Zero Motor Oil, claimed by the company, is its lower-than-average pour point.

***Use Free Postcard For More Details.***

## P100. Truck Step

The Extendo Corp., Los Angeles, Calif., are the manufacturers of the new Extendo No Break Truck Step.



The outstanding feature of this step is that it will not break off should the driver forget to retract it. The unit merely slides back into its frame or rack if the truck is backed up against a dock, wall or other obstacle. The step is attached to the truck by four bolts.

***Use Free Postcard for More Details.***

## P101. Hard Facing

A new method for hard-facing by using a metallizing gun and Metco-Weld H, a "wire" composed of a powdered hard-facing alloy extruded with a plastic binder, is announced by Metallizing Engineering Co., Inc., Long Island City, New York.

(TURN TO NEXT PAGE, PLEASE)

# NEW PRODUCTS

USE POSTCARD — NO STAMP NEEDED

(Continued from Page 61)

This Sprayweld method attains the previously difficult objective of applying smooth, uniform, relatively thin hard coatings, in a highly practical and inexpensive manner, according to the manufacturer.

During the spraying operation, the plastic binder is completely volatilized, and the deposit consists entirely of the metallic constituent. Subsequent fusing, with any fusing torch or with an attachment on a Metco metallizing gun, results in a coating alloyed to the base and physically and chemically identical to hard-facings of the same alloy applied by other methods, the company states.

***Use Free Postcard for More Details.***

## P102. New Sander Kit

The Sterling Tool Products Co. of Chicago announces a new utility case to house its Sterling 1000 Portable Electric Sander and all accessories to provide a complete working sander kit.

This new sander kit case is of 20 gage steel with latches and hasp to permit locking with padlock. The case is divided into three compartments, containing the

Sterling 1000 sander, accessories such as extra sanding pads, lubricating oil, bearing grease, two cartons of dust filters, an extra brush and spring assemblies.

***Use Free Postcard for More Details.***

## P103. Drill Saw Tool

A new drill saw tool attachment developed by E. H. Stackhouse, Philadelphia, Pa., is a device which can be attached to the electric drill for sawing, filing, peening, riveting. Using a high speed hack saw blade, a 7-point band saw blade, or a regular hack saw blade, the tool will saw wood, plastic, steel, or other metal of any thickness, according to the company. For filing, a regular file or any tool having ¼-in. shaft is inserted. The tool is said to be ideal for fender, panel, frame and muffler work.

***Use Free Postcard For More Details.***

## P104. Dispensing Pump

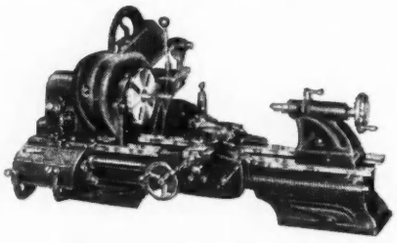
A new, meter-equipped, rotary hand pump is announced by Bowser, Inc., Fort Wayne, Ind.

The unit is built for fueling or dispensing of liquids up to 10,000 S.S.U. viscosity. The meter registers to 8 gal and is equipped with a 9999 gal totalizer. The unit includes a 40-in. suction pipe with bung attachment, 8 ft oil resistant discharge hose and aluminum nozzle.

***Use Free Postcard For More Details.***

## P105. Low Cost Lathe

A new low cost precision lathe developed by the Atlas Press Co., Kalamazoo, Mich., incorporates a special mechanism which speeds turning operations requiring the use of power feed by providing instant selection of 54 threads or feeds.



A large direct-reading index plate mounted in front of the gear box shows lever and gear positions. A convenient tumbler-gear lever reverses gears or disengages them from the lead screw.

Other features of the lathe are Timken tapered roller bearings, precision ground bed, back gears for extra power, complete V-belt drive, 16 spindle speeds, reversible power cross and longitudinal feeds.

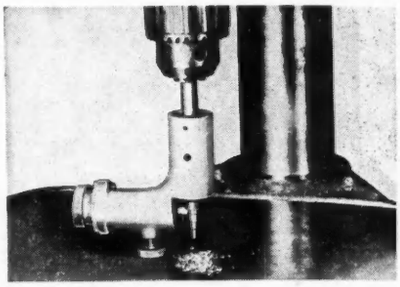
***Use Free Postcard For More Details.***

## P107. Lathe Adapter

The Millholland Screw Products Corp., Indianapolis, Ind., announces a new metal turning and cutting tool which can be used to convert drill presses, woodworking lathes and grinder stands into precision metal working lathes.

The Tru-Turn tool has a built-in micrometer providing tool-room accuracy to one-thousandths of an inch. It handles ½ in., ⅜ in. and ¼ in. brass, aluminum and steel bar stock, and turns multiple diameters.

The new tool comes complete with ⅜ in. and ¼ in. guide bushings and three precision ground bits, one each for aluminum, steel and brass.



Adaption to a woodworking lathe is facilitated by use of a face-plate work-driving chuck and three adapters, furnished at a small additional cost.

***Use Free Postcard for More Details.***

## P108. Portable Light

The MI-370 Auto Hand Light developed by John W. Hobbs Corp., Springfield, Ill., provides a combination spot and general flood light.

Of all metal construction, it is equipped with plug to fit any cigar lighter and with 15 ft of flexible cord which when not in use can be wound around the reflector. The coil spring handle of stainless steel makes an ideal hand hold. One end can be loosened to fasten around bumper or other object. A hole at the top of handle permits hanging from nail or attaching cord for suspending and the hook is useful to hand on rods or wires or to insert in buttonhole of clothing.

***Use Free Postcard for More Details.***

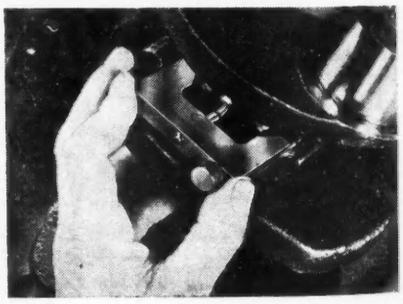
## P106. Crankshaft Gage for Journal Measurement

**A new crankshaft gage, permitting convenient and accurate journal measurement in the engine, is now available through Federal-Mogul Service, Coldwater, Mich.**

**Employing the functions of two basic geometrical figures — the right triangle and the circle—the new gage is said to give quick, simple, accurate measurement.**

**After removal of the main bearing cap, the gage is placed against the journal. A simple but precise plunger-and-lockscrew device gets the journal radius.**

**By applying a micrometer to the gage and doubling the reading, the diameter is obtained. Taper can be checked by applying the gage at both ends of the journal. Out-of-roundness can be detected by rotating the shaft**



**and taking a series of readings.**

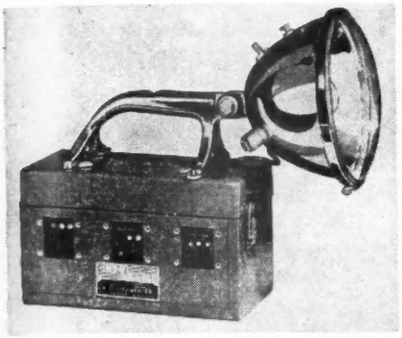
**Offered in three sizes, for crankshaft diameter ranges of 1.970 to 2.550; 2.470 to 3.250; and 3.220 to 4.125.**

***Use Free Postcard for More Details.***

## P109. Battery Lamp

The U-C Lite Mfg. Co., Chicago, Ill., is manufacturing a No. 311 Portable Rechargeable Electric Hand Lamp, which throws a 2500-ft beam to show the state of charge of the battery.

With chromium finish head and handle, this new lamp has three transparent windows, one for each battery cell. In each window there are three specific gravity ball



indicators, one green, one white and one red. When the green ball is down, the battery is 5 per cent discharged; when the white ball is down, the battery is 50 per cent discharged; when the red ball is down, the battery is 95 per cent discharged; when fully charged, all three balls rise to the water level line.

The battery case itself is 100 per cent spillproof. There is no leakage no matter if the lamp is held upside down, sideways or in any other position. Shelf life of the 311 battery is 90 days under favorable conditions. Accessories include hold-down bracket; carrying strap; resistance switch; wire guard; snap-on lens—red—green—blue and floodlight; charger and 15 ft extension cord—complete with 6-volt, 25-watt bulb and adapter.

***Use Free Postcard for More Details.***

## P110. Tail Gate Latch

A new automatic Tail Gate Latch is now available through Maybrook Sales, Inc., Poughkeepsie, N. Y. This new device is designed with an adjustable stop rod which automatically trips the front control cross rod as the bed begins to rise, allowing the tail gate to swing freely. While lowering the bed, the trip arm follows the quadrant, locking the tail gate automatically in position.

An installation of this type saves two to four minutes on every load, the manufacturer claims, cuts accidents and wrecks and saves wear and tear on men and trucks.

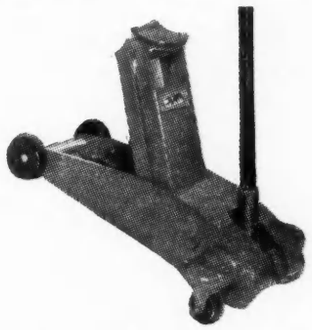
The automatic tail gate latch is cast steel and requires no maintenance. Complete instructions with each kit makes mounting easy.

***Use Free Postcard for More Details.***

## P112. 2-Ton Jack

The Automotive Industrial Co. of New York has announced the production of a new, all steel, 2-ton service jack with one easily interchangeable hydraulic unit containing all operating parts and hydraulic mechanism.

This 117-lb International Jack has front



ball bearing swivel castors. Its detachable handle makes road and emergency calls an easy task. Except for the handle socket and saddle, no cast parts are used, thus permitting a maximum overload with no danger of cracking arm or frame. A maximum lift is accomplished in eight strokes.

***Use Free Postcard for More Details.***

## P113. Bench Grinder

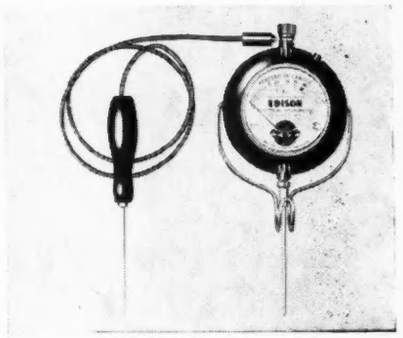
Speedway Mfg. Co., Cicero, Ill., now has available the Blue Line, No. 117 Portable Bench Grinder with many new improvements. The grinder has a larger motor rated at 1 1/15 hp. Grinding wheels are 4½ x ⅜ x ⅜ in. Made of light one-piece cast aluminum, the case completely houses the motor, shaft and bearings and provides integral wheel guard and tool rests.

Weighing only 7½ lb complete, the tool is portable or it can be mounted.

***Use Free Postcard For More Details.***

## P114. Battery Tester

Thomas A. Edison, Inc., announces a new type of battery tester—the Edison



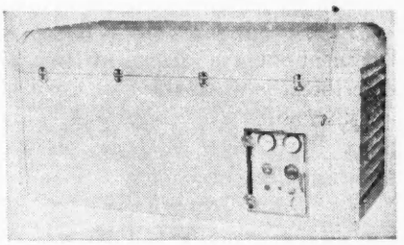

Electrical Hydrometer. The new instrument, designed to replace the conventional type hydrometer, is said to simplify and speed up the per cent-of-charge test.

Instead of a voltage reading, the dial gives the per cent of charge directly. Specific gravity readings, temperature corrections and removal of the vent plugs are not necessary and the danger of dripping acid is avoided.

***Use Free Postcard For More Details.***

## P115. Refrigerating Unit

The Transport Cooler Co., Farmington, Mich. announces production of a new model refrigerating unit for trucks and trailers where low temperatures, from zero to 20 deg below are needed to transport ice cream and frozen foods. The cooler consists of two easily-installed package units.

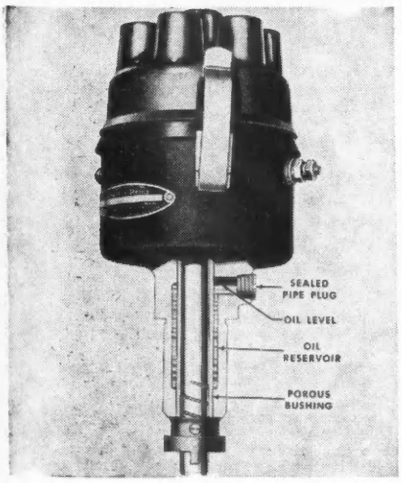


This model includes an enclosed power unit 4 x 2 x 2 ft, which is light in weight and may be attached over the cab or under the body. The cooling unit, with associated valves and fittings, measuring only 2 x 2 x 2 ft is placed inside the body. To connect these two units requires only three lines of tubing: refrigerant supply, return line, and a flexible shaft which drives the cooling fan. One small hole to admit these tubes is the only opening needed in the body, thus reducing installation costs.

This model is said to be economical in

(TURN TO PAGE 150, PLEASE)

## P111. A New Distributor With Built-In Lubrication




**Delco-Remy of General Motors Corp., Anderson, Ind., has announced a new series of heavy-duty distributors in which shaft lubrication is provided by a built-in oil reservoir. A special porous bushing surrounding the shaft carries the oil from the reservoir to the bearing surfaces.**

**According to the manufacturer, ignition distributors of this design need not be relubricated oftener than every 50,000 miles (or at time of major engine overhaul) except under conditions of extreme heat or other unusual circumstances.**

**The reservoir in the distributor housing may be refilled with Grade 20W oil by removing a threaded plug which is afterward resealed with an oil-resistant compound.**

***Use Free Postcard for More Details.***

# Questionnaire
## *for*
## Screening Mechanic Applicants

**August article on pre-interview test brought so many inquiries that virtually all questions are herewith reproduced for benefit of operators**

IN ANSWER to numerous requests, COMMERCIAL CAR JOURNAL herewith publishes in detail the list of questions referred to as "Brain Teasers" and "General Knowledge" in the article, "Mechanic's Questionnaire" published on page 34 of the August issue.

In the original article, author Aro Lekander of the Detroit Creamery described the workings of the unique questionnaire which he and Fleet Supt. R. E. King had devised for screening fleet mechanics.

The "Brain Teaser" and "General Knowledge" sections of the questionnaire were designed especially to test the mechanic's knowledge of his trade. It has been Mr. Lekander's experience that they do just that. While good mechanics have no trouble making reasonably high scores, the "bluffers" are stopped in their tracks. In still other instances the questions enable sincere applicants to realize their shortcomings and prompt them to down grade their application from "mechanic" to "helper."

The actual Mechanic's Questionnaire is in mimeographed form on standard 8½ x 11 in. sheets. In addition to the two sections reproduced here, there is a general introductory section of more or less routine nature dealing purely with the applicant's own appraisal of his previous experience. It was highlighted in the August article.

In the "Brain Teaser" section of the mimeographed questionnaire, squares are provided so that it is only necessary to check or block out the correct answer. In the "General Knowledge" section, sufficient space is provided for appropriate answers. These squares and spaces are omitted in the questionnaire as published herewith to conserve space.

For reasons that will be apparent to supervisory personnel, the answers cannot be published. Competent supervisors can figure out correct answers. In cases where supervisors wish to check the accuracy of their answers, we will arrange to provide a correct list.

## *Brain*

Which unit protects a generator?
1. Coil
2. Radio suppressor
3. Voltage regulator

Of the following which would cause an engine to stall at low speed?
1. Plugged pump jet
2. Partly plugged main metering jet
3. Air leak in the intake manifold
4. Plugged orifice tube

If valve springs are too strong they will cause?
1. The valve to remain closed too long
2. The valve to break
3. The valve to open too soon
4. The valve to not open at all

What is the firing order of a 6 cylinder engine?
1. 153642
2. 152643
3. 153624
4. 142536

Which cleaning medium would you recommend for cleaning hydraulic parts?
1. Alcohol
2. Lead-free gasoline
3. Kerosene
4. Benzene

With the exhaust valve on #5 cylinder just closed on a 6 cylinder engine, to which of the following plug wire terminals should rotor point to?
1. #4
2. #6
3. #1
4. #5
5. #2
6. #3

When a hydrovac power cylinder fails while engine is running look for?
1. Oil on the brake lining
2. A leak in the vacuum check valve
3. A hole in the hose from the air cleaner to the hydrovac
4. Lack of lubricant in the vacuum cylinder

First operation before removing starter is to?
1. Remove generator lead wire
2. Loosen the fan-belt
3. Disconnect the battery cable
4. Remove the starter brushes

A dead ammeter with engine running indicates probable trouble as?
1. A cracked distributor cap
2. A broken fan-belt
3. A loose fan-belt
4. A half-charged battery

Too much clearance between the oil pump body and gears would show up as a tendency for the?
1. Oil relief valve to stick
2. Oil pump to overheat
3. Back pressure in oiling system
4. Oil pressure to drop

Half charged condition of battery although the vehicle is in the normal use indicates what troubles?
1. Coil shorted
2. Armature grounded
3. Voltage regulator
4. Ammeter shorted

Where would you attach the tie-rod?
1. To the front wheels
2. To the pitman arm
3. To the steering knuckle arm
4. To the drag link

On a vehicle with the split type rear axle housing, how are the differential carrier bearing adjustments kept in good order?
1. Through a special lock-ring assembly
2. Through adjusting lock nuts
3. By adjusting ring gear and pinion
4. Through machined surfaces in the housing

Poor oil mileage may be a result of too much?
1. Intake valve guide clearance
2. Camshaft end play
3. Exhaust valve guide clearance
4. Valve tappet clearance

A common check that can be quickly made for too rapid wear on tires is?
1. The angle of steering knuckle arms
2. Camber
3. Toe in
4. Caster

Low carburetor bowl level would cause?
1. Rich mixture at high speed
2. Rich mixture at low speed
3. Lean mixture at high speed

# Teaser Section

Should the marks on crankshaft and camshaft gears be lined up to?
1. Insure a proper fit of meshed teeth
2. Time valves correctly
3. Prevent excessive wear on gears

Where should the relief valve on universal joints be located?
1. Between trunnion shaft and bearing cup
2. In the end of bearing cup
3. In center of cross

What would you use to assemble connecting rods and pistons?
1. Hammer and block of wood
2. Arbor press
3. Bench vise
4. Piston vise

Which condition would cause unequal caster?
1. Twisted axle
2. Bent steering knuckles
3. Unequal air pressure in front tires

What besides carbon would cause a valve to stick open?
1. Light valve springs
2. Bent rocker arm
3. Insufficient clearance

How would you release the brakes on a trailer after an emergency application?
1. Bleed reservoirs on truck
2. Disconnect the emergency or charged line
3. Equalize pressure in truck and trailer system
4. By rotating the brake shoe adjusting nut counter-clockwise

If all parts comprising float circuit were O.K. what would cause flooding in the carburetor?
1. Too small jets
2. Low fuel pump pressure
3. Bent main nozzle
4. Pinhole leak in the float

Dirt generally gets into cylinders from the?
1. Oil
2. Water
3. Air
4. Grease

Intake manifold vacuum at idle speed should read about?
1. 30 inches
2. 20 inches
3. 5 inches
4. 10 inches

What is adjusted by the eccentric nut on the worm and sector type steering gear?
1. Back lash
2. Crossshaft end play
3. Worm end play
4. Bearings

To properly make an adjustment on a steering gear you should?
1. Turn the wheels 20° each way
2. Jack-up the vehicle
3. Disconnect the drag link
4. Check the air pressure

The smallest allowable voltage of a battery under load is?
1. 6 Volts
2. 3.5 Volts
3. 5 Volts

What indicates worn main bearings?
1. Engine stopping
2. High oil pressure
3. Low oil pressure
4. Engine running hot

Hopping or shimmy is caused by?
1. Loose front wheel bearings
2. Overinflated tires
3. Zero camber setting
4. Boot in tire

If battery and connections are O.K., the most probable starter failure is?
1. Bent starter shaft
2. Grounded field
3. Loose bushings
4. Bad starter switch

What is the purpose of the manifold heating device?
1. Maintain even engine temperature
2. Provide heat for driver
3. Preheat the gases in the intake manifold
4. Warm the oil so it will flow sooner

To what are the breaker points connected to?
1. Secondary coil
2. Primary coil
3. Distributor rotor
4. Spark plugs

If engine is idling at 100 R.P.M., how fast is the distributor turning?
1. 50 rpm
2. 100 rpm
3. 200 rpm

The differential?
1. Increases power of truck
2. Allows 1 wheel to turn faster than other
3. Increases speed of truck

Sequence of tightening cylinder head should be?
1. From either side of head to the other
2. From either end
3. From the middle and toward each end

A cracked intake manifold causes?
1. A noticeable rise in oil pressure
2. Piston slap
3. Carburetor to give too rich mixture
4. Engine skips and misses

A "hard" brake pedal on Lockheed brakes indicates?
1. Shoe retracting springs broken
2. Shoes not centralized
3. Too much clearance between shoe and drum

A leak between the gas tank and fuel pump would probably cause?
1. A rich mixture
2. A lean mixture
3. Fuel pump to pump air instead of fuel

When adjusting the carburetor the vacuum gauge is attached to?
1. The carburetor
2. Intake manifold
3. Exhaust manifold

A torque wrench is used to measure?
1. Size of bolts and nuts
2. Strength of bolts and studs
3. Pull in foot pounds

An increase in compression when oil is put into a cylinder indicates?
1. Head gasket is "shot"
2. Rings faulty
3. Piston loose

The hand lever in an air brake system?
1. Controls the amount of pressure applied to trailer brakes
2. Controls the amount of air entering compressor
3. Controls the reservoir pressure

Weak breaker point spring tension is indicated by?
1. Ping on acceleration
2. Miss at high speed
3. Crossfire

On a hydraulic hydrovac system from where would you start bleeding it?
1. Brake line to left rear wheel cylinder
2. Hydrovac unit
3. Line farthest from master cylinder
4. Master cylinder

Which of the following malfunctions would occur if the accelerator pedal hit the floor-board before the throttle valve was wide open?
1. Poor idle adjustment
2. Low Top Speed and no power
3. Lean mixture at all speeds
4. Choked condition and poor mileage

What would you check first if the engine quit suddenly?
1. Carburetor
2. Intake Manifold Vacuum
3. Ignition
4. Cylinder Compression

Vacuum of a well-working engine should be?
1. 22 to 24 inches
2. 10 to 12 inches
3. 18 to 21 inches
4. 24 to 32 inches

An important function of the condenser is to?
1. Decrease coil intake
2. Prevent arcing at points
3. Decrease the voltage at points
4. Increase the voltage at points

The carburetor receives fuel only when?
1. Idling adjustment valve is open
2. Throttle valve fully closed
3. Float valve is off its seat
4. Float valve is on its seat

A wet distributor would most likely cause?
1. Uneven firing
2. Ruined condenser
3. Burned out coil

When starting an engine what causes "kickback"?
1. Defective vacuum advance
2. Carbonized engine
3. Bad points
4. Spark advanced too far

Excessive ping under load is caused by?
1. Late timing
2. Incorrect spark advance
3. Wide gaps in plugs

Interlocking device in transmissions is used to?
1. Make shifting easier
2. Prevent shifting into more than 1 gear at a time
3. Help eliminate transmission noise while driving

A good fuel pump should show pressures of?
1. 2 to 4 lb
2. 10 to 12 lb.
3. 6 to 8 lb.

On tuning a gasoline engine which two items go together?
1. Compression gauge
2. Neon light
3. Tachometer
4. Timing ignition

In testing compression it is very important to?
1. Have engine running
2. Have throttle wide open
3. Remove all plugs
4. Remove 1 plug at a time

Clean regulator contacts with?
1. Gasoline
2. Fine-cut file
3. Non-metallic sandpaper

A cold running engine indicates?
1. Ignition timing incorrect
2. Radiator filled to the top
3. Open thermostat

On removing a transmission it should be supported to prevent damage to?
1. Flywheel
2. Bell Housing
3. Clutch cover
4. Clutch disc

A hydrovac is installed to?
1. Equalize output on brakes
2. Synchronize brake shoes to drums
3. Increase line pressure

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# General Knowledge Section

Do reground or honed cylinders need to be cleaned?
1. If YES, with what?

Have you relined Mains?

Have you hand scraped Mains?
2. How much out-of-round would you allow?
3. How much main bearing clearance would you allow?
4. Would you allow crankshaft end play?

Have you bored connecting rod bearings?

Have you scraped connecting rod bearings?
5. How much out-of-round would you allow?
6. How much clearance would you allow?
7. Would you allow connecting rod side play?

8. Can you set a camshaft and crankshaft on "Time" without any gears or chain being on?

9. Can you set a distributor under above conditions? Our truck engine cylinders run from 3⅛ in. to over 4 in.

10. How much ring gap or clearance would you allow for ordinary operation?

11. Which piston requires more clearance:
cast iron? aluminum

Are you familiar with uses of a torque wrench?

12. List some places where you would use it?

13. Why use a torque wrench?

14. Can you name any use for a vacuum gage?

15. Can you name any use for a pressure gage?

16. Can you name any use for a compression gage?

17. Can you name any use for a neon light?

18. Can you set a dual ignition distributor?

Are you familiar with setting breaker points by cam angle or dwell meter?

19. How would you set the points otherwise?

20. How much back lash or wear would you allow on timing gears?

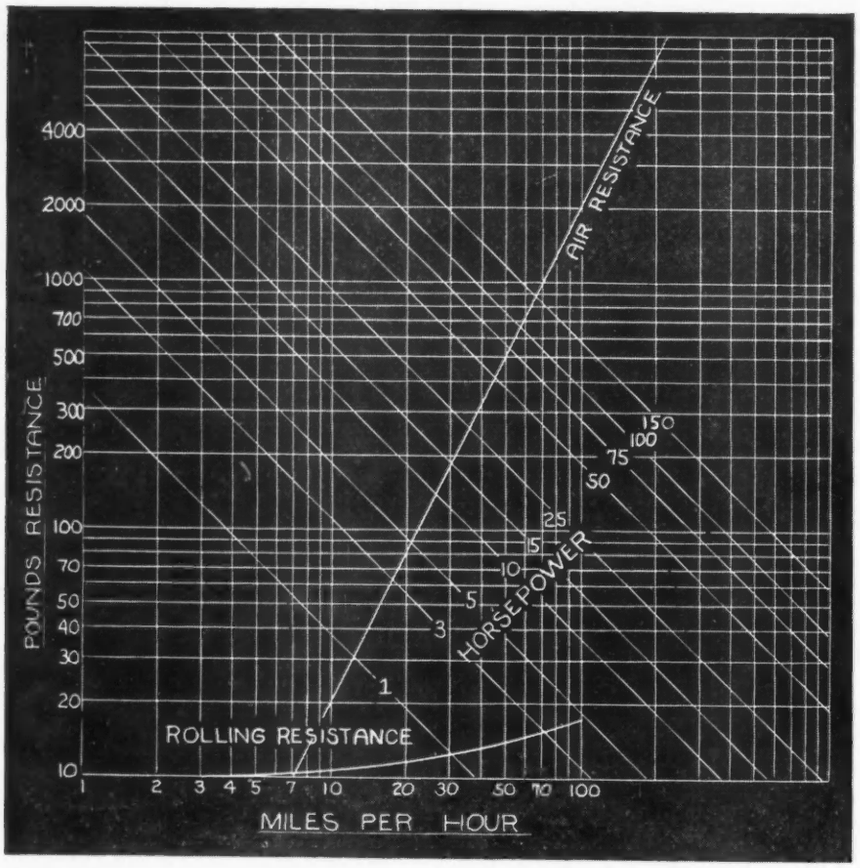



*Fig. 1 shows rolling and air resistance in pounds at various speeds for vehicle described in text. It also shows horsepower required to overcome these resistances*

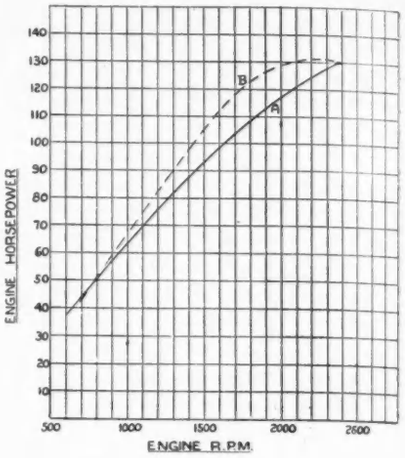



*Fig. 2 shows comparative power curves of standard (A) and modified engine*

# Rolling, Grade and Air RESISTANCE

**Why fleetmen should pay more attention to those factors in selecting their vehicles as a means of insuring maximum operating and maintenance economy**

*by* ***G. DOUGLAS RICE***
**Automotive Consultant**

IN AN INVESTIGATION of the transportation industry, particularly tractor, trailer and bus purchasers and manufacturers, will show a definite lack of understanding of the importance of rolling resistance, air resistance and grade resistance as they affect the economical operation and maintenance of a fleet.

These three factors are among the most important for they determine the performance of the vehicle. Their combination dictates engine horsepower curve, tire size, gear ratio, styling, etc. Frequently oversized powerplants are installed in buses and tractors to give added performance when the correct solution is engine timing and gear ratios. This is not necessarily the fault of the manufacturer for it is the trade's responsibility to inform the manufacturer of its needs.

This article deals primarily with the determination of the horsepower curve and gear ratio. However, factors are included that affect these calculations. Many operators should prepare graphs as shown on these pages in order to intelligently purchase equipment for their particular needs. The graphs in this article have been prepared for a particular combination of tractor and trailer and the figures contained herein will not necessarily hold true for other combinations. The units used in these tests are produced by prominent manufacturers and are used by many carriers.

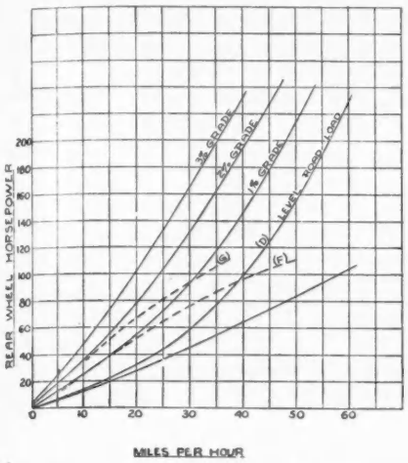



*Fig. 3 shows rear wheel horsepower available with standard gear ratios*

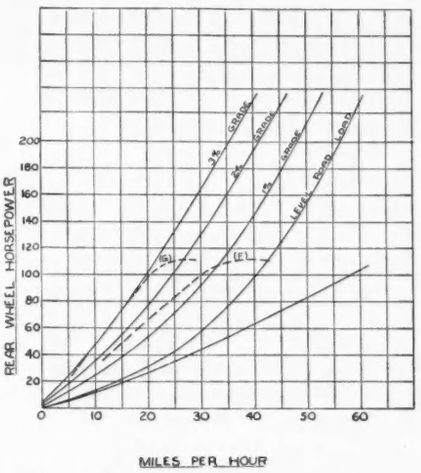



*Fig. 4 shows improved performance by using modified gear ratios and engine*

Given below are the specifications for the units:

Tractor:
- Rating: 45,000 lb Gross Vehicle Weight
- Tire Size: 10:00x22 in.
- Weight—9500 lb

Trailer:
- Weight with load—35,500 lb
- Tire Size—11:00x22 in.

Combination:
- Gross vehicle weight—45,000 lb
- Frontal area—80 sq ft
- Air flow coefficient—.0025
- Loss of hp from engine through rear wheels—15 per cent

### Plotting Resistance Curves

FIG. 1 gives all data necessary for plotting road load curves. Many manufacturers use a rolling resistance coefficient of 15 lb per 1000 lb weight; however, past experience in tests and performance show that a coefficient of 10 lb per 1000 lb weight is a more accurate figure and it has been used in these charts.

The rolling resistance curve in Fig. 1 shows 13.2 lb per 1000 lb weight at 40 mph. Multiplying 13.2 by 45 gives 594 lb resistance which means that 63 hp is required to overcome the rolling resistance at 40 mph.

Air resistance at 40 mph is 330 lb which is equal to 35 hp.

Grade resistance for this combination for a 1 per cent grade is this 450 lb and at 40 mph is equal to 48 hp. Grade resistance is found by multiplying the per cent grade by the gross vehicle weight and dividing by 100.

By adding 63, 35 and 48 hp it may be seen that 146 hp is required to propel this vehicle combination at 40 mph up a 1 per cent grade with no head wind. By plotting a series of similar points on a graph, road load curves for any vehicle may be obtained and these curves may be seen in Figs. 3 and 4.

### Horsepower and Gear Ratios

CURVE A in Fig. 2 is the manufacturer's horsepower curve for the tractor used in these charts. The engine is governed at 2400 rpm and is shown by the abrupt cutoff of the curve. Transposition of this horsepower curve through the manufacturer's 4th and 5th gear ratios is shown as curves (G) and (F) respectively in Fig. 3. Curve (D) denotes the level road load curve for this combination. One can immediately note that 4th gear outperforms 5th gear under all conditions except that 2½ mph additional velocity is obtained before the fifth speed curve (F) crosses the level road curve (D). The fourth speed curve (G) stopped at 37 mph representing the governed engine speed of 2400 rpm.

It is also noticeable that operation in 5th gear follows the maximum horsepower curve more closely and this is not conducive to long engine life. That portion of the 5th gear curve (F) which extends to the right of the level road load curve is useless for there is not sufficient horsepower available to overcome the rolling and air resistance. This portion of the curve should be transferred to a point where it will do the maximum good.

It therefore follows that the manufacturer's gear ratios as shown in Fig. 3 are not desirable insofar as maximum performance and engine life are concerned. Rear wheel horsepower curves for use in these charts may be readily obtained by using a chassis dynamometer usually found in the more progressive transportation companies.

## Savings Justify the Practice

**The following savings were made possible in the example outlined by careful scrutiny of the points covered in the article.**

1. **Maintenance ..... 17 per cent**
2. **Fuel consumption .. 5.8 per cent**
3. **Increased payload .. 3.9 per cent**
4. **Savings in road time 7.3 per cent**

### Modified Engine

ASSUMING 2400 rpm to be the design maximum for various reasons, a horsepower curve similar to (B) in Fig. 2 is recommended for this engine. This curve is obtained from the same engine by redesign of the ignition and valve timing.

(Editor's Note: By redesign the author means that a new camshaft, and cams for ignition timing are necessary to effect the improvement in the horsepower curve. It is his feeling that very large fleet owners with one make and model tractor, and with adequate shop facilities, could turn out new camshafts and the benefits derived from the operation would undoubtedly pay for the tooling expense over a period of time. However, this is not the author's intent. He believes the manufacturers should make the changes, and supply new parts for installation in the engine. It is the fleet operator's responsibility, he contends, to inform the manufacturer of operating conditions and corresponding horsepower requirements. When enough operators bring sufficient pressure to bear on the manufacturer, he believes these changes will be forthcoming.)

Advantages of the new curve are as follows:

1. Increased acceleration due to increase in power at lower speeds.

(TURN TO NEXT PAGE, PLEASE)

# Rolling, Grade and Air Resistance

(Continued from page 67)

2. Flat top curve giving maximum engine output over a wide range of speeds thus giving additional gradeability.

3. Placement of the curve with 2400 rpm falling just past the hp peak generally prevents excessive piston speeds or "over-reving" of the engine in other than down grade operation and this advantage eliminates the need for a governor and accessory drive on the engine.

4. Longer engine life and less wear on other moving parts because greater hp is available at operating speeds.

### Figuring New Ratios

TRANSPOSITION of the new hp curve through the new 4th and 5th gear ratios is shown in curves (G) and (F) respectively in Fig. 4. The method of determining the 5th gear ratio is as follows: Read up the left hand side of the chart to the maximum rear wheel horsepower at 2400 rpm which in this case is 85 per cent of 130 or 111. Trace this point across the chart horizontally until it intersects the level road load curve. Knowing the tire size used on the vehicle immediately establishes the 5th gear ratio. In this case 111 hp intersects at 43 mph establishing a 5th gear ratio of 6.6 as against 5.66, the old 5th gear ratio. Using ratio 6.6, points are plotted at different velocities to establish the 5th gear curve.

Establishing the maximum point of velocity for 4th gear is arbitrary and usually is chosen as a happy medium between gradeability and desired speed. Fourth gear in Fig. 4 was chosen as 9.7 as against 7.55 in Fig. 3. This placed maximum speed just above the portion of the 5th gear curve where the hp began to drop rapidly. Other gear ratios are established and plotted in the same manner.

### Improved Performance

A POINT has now been reached where a comparison of performance of this vehicle can be seen with only engine timing and gear ratios changed. Keep in mind that these changes have been made to give better performance against Air Resistance, Rolling Resistance and Grade Resistance.

1. Increase in top speed of 3 mph.
2. Elimination of governor and accessory drive.
3. New 5th gear outperforms old 4th and 5th gears between 20 mph and top speed.
4. Less fuel consumption.
5. Increased gradeability in 5th gear of 100 per cent.
6. Increased gradeability in 4th gear of 44 per cent which also means less shifting.
7. Longer engine life and lower stresses at low speeds.

To keep rolling resistance at a minimum for top performance the following items should be closely checked:

1. Wheels should be in alignment.
2. Tires maintained at proper inflation.
3. The ratio of vehicle weight to gross vehicle weight should be kept as low as possible for maximum payload capacity.
4. Proper use of lubricants.

Air resistance is not too important in operation below 40 mph; however, it does constitute a major portion of resistance above this speed. Lower air resistance at any speed is worthwhile for the additional horsepower gained may be used for greater gradeability or top speed. Actually air resistance does not increase as the square of the speed and the flow coefficient is not independent of the size of the object; however these factors have been treated as standard because of the low speeds involved. The following points should be observed to keep the flow coefficient as low as possible:

1. Streamlining.
2. Smooth skin bodies.
3. Light baffles on understructures.

The author wishes to thank Roland A. Labine for his valuable help in formulating and checking this article.

## JOBSERVATIONS

by Buster Rothman

**The fellow who goes around with a chip on his shoulder usually carries a block between them.**

★ ★ ★

**You can't climb the ladder of success with cold feet.**

★ ★ ★

**Man is like steel—useless when he has lost his temper.**

★ ★ ★

**Failure is merely the path of least persistence.**

★ ★ ★

**It is the fresh egg that gets slapped in the pan.**

★ ★ ★

**Making one's way through life on the next fellow's bunions arises from callouses on the brain.**

★ ★ ★

**To avoid trouble and insure safety, breathe through the nose. It keeps the mouth shut.**

★ ★ ★

**Horse sense is strictly a matter of bridling the tongue.**

★ ★ ★

**The two most important muscles which operate without the direction of the brain are the heart and tongue.**

★ ★ ★

**Shooting off your tongue is the kind of artillery that backfires.**

★ ★ ★

**Men are born with two eyes and one tongue in order that they should see twice as much as they say.**

★ ★ ★

**The reason a dog has so many friends is that he wags his tail instead of his tongue.**

★ ★ ★

**Potent tip: Your ears are not made to shut—your mouth is.**

## Clip and Save

**This is the third in a series of articles outlining in detail the eight vital steps fleetmen should consider in the selection of the right truck for the right job. Printed on the following 16 consecutive pages, the data is organized for quick reference and easy reading. Every fleetman will want to study the material carefully and add it to his previous clippings. It will be valuable for future reference in determining the correct application and selection of his trucks.**

# CORRECT Application of Motor Trucks

**Eight vital steps in the selection of the right vehicle for specific service requirements and economical operation**

## STEP 3

# Determining Wheelbase and Chassis Model Size

**Correct GVW Rating . . Capacity Rating Factors . . Finding Gross Weight Distribution . . Determining Correct Wheelbase . . Legal Limits and Load Distribution . . Tractor-Semi Fifth-Wheel Location and Load Distribution**

EXACTLY WHAT IS A CORRECT TRUCK MODEL? The answer has three parts: First, the model should be of the correct type. Second, the model should have the right gross weight capacity rating. Third, the engine available for the model should match the horsepower requirement found previously in Step 2.

The first part is the most clear cut. But the second stirs up some problems which a careful choice must answer; problems of how the weight will be divided between each axle; problems of legal limits—Is the load on the axle more than the law will stand? problems of wheelbase length; and others. These problems are all the meat of this step. The text should be followed, with pad and pencil, as the answers are worked out and the correct trucks model and wheelbase are selected.

### *Selecting the Type of Vehicle*

ONE of these six types of trucks will satisfy the needs of most trucking operations:

1. Straight truck (two-axle), conventional type.
2. Straight truck (two axle), cab-over-engine type.
3. Tractor-trailer, conventional type.
4. Tractor-trailer, cab-over-engine type.
5. Straight truck (three-axle), conventional type.
6. Straight truck (three-axle), cab-over-engine type.

Selecting the type of vehicle is a matter of narrowing down the list of six to the one vehicle most suitable for the job. First narrowing down can be done by the decision to use a truck or tractor-trailer. This choice for a given job depends mainly on the amount of load. When the load is small enough, the truck is usually preferred, especially in city operation. In many cases, though, a semitrailer is needed because of the bulk of the large load. A truck body to carry the same bulky load would make a very long vehicle which would be unwieldy to drive for most operations. Tractor-trailers are sometimes preferred when the operation can use a system of parking the trailers for loading and unloading while the tractor is working elsewhere.

Sixwheel trucks (three-axle—driving on four rear wheels) are used less commonly than either the straight four-wheel truck or the tractor-semitrailer. They are the choice for special operating conditions, where the other types would be unsuitable; for example, operations through deep sand, wet clay, soft roads, deep snow and ice, off-the-highway operation, and other special conditions. The extra driving wheels provide additional traction to pull the truck through. In some States the laws governing axle and gross weight limits make it advantageous to use the six-wheel trucks on over-the-highway operation since they are allowed to carrry larger payloads.

Perhaps the most-considered choice the purchaser must make is between the cab-over-engine type of chassis, and the conventional truck chassis. This choice is influenced by widely differing factors. In the case of a number of these factors, the advantage and disadvantage is a question frequently calling for an answer on the basis of the buyer's individual preference or experience. For example, factors of riding comfort qualities, safety, ease of handling, and accessibility are a matter of preference. But there are many factors about the design of both types of chassis, each presenting definite advantages in various types of operations. Some of the advantages of the cab-over-engine type of vehicle are:

1. Shorter over-all length, which is an advantage for steering and parking purposes.
2. Shorter turning radius, which is important in close-quarters maneuverability.
3. Longer body space within a given over-all length. For example, in a State where the maximum over-all length of a truck-train is 50 ft., by using a cab-over-engine chassis the unit will have longer body space.
4. Practicable heavier front-end weight distribution. This becomes an advantage in some States because of load laws. When these laws limit the gross weight of a truck to 36,000 lb, for example, and permit only 18,000 lb on any one axle, it theoretically follows that, to carry the maximum load, 50 per cent of the weight would be carried on the front end, which would be impracticable.

However, as much as 33 per cent of the total weight may be carried on the front tires of a cab-over-engine chassis, whereas it is comparatively difficult to obtain such a high percentage on the front of a conventional truck.

On the other hand, the conventional-type truck has certain characteristics that make it a preferable choice for many operations. These are:

1. Lighter loading on front tires is usually available because of the longer wheelbase of the conventional trucks. This is an

advantage, for example, in dump trucks or construction trucks working off the highway in soft ground, sand, etc., since the lighter weight on the front wheels makes them less apt to dig in and cause difficult steering.

2. Shorter body overhang, measured from the rear axle to the end of the body, is an advantage of the conventional-type truck when operating conditions such as sharp-pitched ramps and turning clearances are a consideration.

3. Greater payload with the bridge-type formula of State regulation for gross weight. The longer wheelbase of the conventional-type tractor may work out to an advantage in some States where the over-all length limitations are generous, where restrictions on axle loads are not the limiting factor, and where the maximum gross vehicle weight is determined by the bridge-type formula. (Example of bridge-type formula: Maximum gross vehicle weight equals 750 times (L plus 40). L is the distance in feet between the front axle of the tractor and the last axle of the trailer.) It can be seen from the example that the higher the gross weight, the longer the vehicle must be to carry that weight. With a given length of trailer body, the conventional tractor will be able to carry more weight legally than the c.o.e. tractor because of the longer tractor wheelbase and the longer dimension L.

Now, after these decisions have been made and the type of vehicle chosen, the next step is to choose the chassis model best suited to the job.

## Determining the Correct GVW

TRUCK models are listed in truck manufacturers' specifications by model number and gross vehicle weight rating. The gross vehicle weight rating a manufacturer puts on a truck model is the recommended maximum total weight of payload body and truck. Most manufacturers' specifications have only one gross weight rating for each model. Then the manufacturer's salesman or the buyer revises this gvw figure downward or upward, depending on his estimate of what the truck will be able to withstand under the operating conditions.

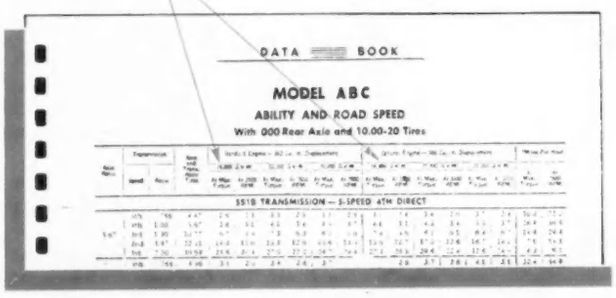
If a model is listed with the gvw rating of 30,000 lb and the operation is the favorable over-the-highway type, this gross weight may be used as a guide to the payload weight the truck can safely haul. But if this same model were to be used in construction work off the highway, obviously the same amount of payload could not be hauled without seriously shortening the life of the truck. Either the payload must be reduced, or a larger truck model must be used. Operating conditions definitely are a part of selecting the truck model.

If the selection of the truck model is to be exacting, a method must be used for determining the effect of the operating conditions. The method here consists of giving each truck model three gross vehicle weight ratings. Instead of the approximate gvw which is open to broad interpretations, the truck model has three definite gvw's: Class A, Class B, and Class C. Typical example:

Class A—21,000 lb (favorable operating conditions).
Class B—19,000 lb (average operating conditions).
Class C—17,000 lb (severe operating conditions).

With each truck model using three gvw ratings, the method of accurate selection of the correct model is simplified. First, the effects of all the operating conditions are calculated (from the Table 1 described later in this step). Next, the result of this calculation is put in terms of a Class A, Class B, or Class C rating. Then the model is chosen by size needed. The conditions under which the truck will operate are automatically part of the choice.

*Fig. 1. Specimen of truck manufacturer's truck data book showing listing of three classes of gross vehicle weights for each truck model*


DATA BOOK

MODEL ABC

ABILITY AND ROAD SPEED

With 000 Rear Axle and 10.00-20 Tires

5518 TRANSMISSION—5-SPEED 4TH DIRECT

In the method for selection of the truck model, first the effects of all operating conditions are to be calculated. What operating conditions are considered in truck model load capacity selection? There are four: (1) Type of load, (2) the method of loading, (3) road conditions, and (4) speed. The amount of load that a truck can carry will depend on how severe these four conditions are. For example, take the effect of the type of load on the truck.

By the *type of load* is meant the way the maximum load is controlled and the proportion of the time it is carried. A tank body carrying a specified liquid is an example of a controlled load. This maximum load is definitely known (provided there are no can racks or side boxes). On the *Truck Requirement Analysis* form (Step 1), this is called *fixed maximum load*. No extra safety factor is needed to take care of the overloads in this case. In other cases, when different kinds of material are hauled on platform- or van-type bodies, some overloads are liable to occur even in the best-regulated companies. This is a variable load. The normal safety factor the manufacturer builds into the truck takes care of a certain percentage of such variations in loading.

One other type of load is listed on the *Truck Requirement Analysis* form, i. e., *diminishing load*. Rapidly diminishing loads are loads carried by trucks which deliver a large part of their load shortly after they start out on the route. Wear and tear on the truck is reduced when carrying diminishing loads. Consequently, in determining the gvw class, a favorable allowance is made for this type.

Method of loading has an effect on the gvw rating class in operations where the loading is severe. Two examples are: Loading by power shovel (especially the larger size shovels), and loading by oil field winch. The shock loads or suddenly applied loads impose a greater than normal strain on the frame, springs, axles, and radius rods.

Road conditions that are rough are also responsible for shock loads which increase the strain on chassis parts. Higher speeds cause not only increased wear, but also more shock in going over rough roads or chuckholes.

The total effect of these four conditions (type of load, method of loading, road conditions, and speed) on the life of the truck, determine whether the model should be chosen on the basis of a Class A, Class B, or Class C gross rating. The problem is to measure this total effect. A method has been evolved for numerically evaluating each of the conditions—similar to the method used in the previous step (Step 2) to evaluate the operating conditions in city service and intercity service. The result is a figure which can then be turned into the correct gross rating class.

## Capacity Rating Factors

THE accompanying table, *Capacity Rating Factors for Gross Weight Capacity Rating* shows the four conditions influencing load-carrying capacity—*type of load, method of loading, road conditions*, and *speed*. By using this table, each of the four conditions can be evaluated and a model chosen to closely fit the needs of the job. Each of the variations of these four conditions has been given a capacity rating factor, which was established from studies of actual operations plus the experience and advice of automotive engineers in the field. These factors have been chosen in such proportion to each other that after the factor has been found for each of the four conditions, the four can be multiplied together and a total capacity rating factor obtained which sums up the entire operation. The total capacity rating factor is used to determine the class of rating whether Class A, Class B, or Class C—as follows:

| Total Capacity Rating Factor | Gross Rating Class |
|---|---|
| 1.06 to 1.10* | = Class A (favorable operating conditions) |
| .93 to 1.05 | = Class B (average operating conditions) |
| .92 and less | = Class C (severe operating conditions) |

(* For rating factor of 1.11 or higher add 10 per cent to Class A rating)

As an illustration of the method for using these factors, the reader should continue with the application of a truck for the

Beverage Bottling Co. of Midcity, Ohio, which was begun in Step 2.

First factor in the table is *type of load.* Which type is hauled by this bottlers' trucks? The *Truck Requirement Analysis* form shows that the body design allows only a certain maximum number of cases. And the weight of a case of empty bottles is nearly the same as a case of full ones. Since the loads outgoing and incoming are nearly the same, the type of load can be considered as fixed. Looking then on Table 1, under *type of load,* the factor of 1.05 for *fixed load* is chosen.

## TABLE I

**CAPACITY RATING FACTORS FOR GROSS WEIGHT CAPACITY RATING**

| TYPE OF LOAD | Fixed load, rapidly diminishing type of operation | Fixed load | Maximum loads with some high peaks and many light loads | Normal maximum load and some high peaks |
|---|---|---|---|---|
| Capacity Rating Factor | 1.07 | 1.05 | 1.03 | 1.0 |
| METHOD OF LOADING | Loading from power shovel with dipper over 2-yard capacity | Loading from power shovel with 2-yard dipper, or smaller | Oil field winch loading; or truck mounted crane loading; or its equivalent | Hand, or hand truck, or conveyor loading |
| Capacity Rating Factor | .90 | .94 | .96 | 1.0 |
| ROAD CONDITIONS | Off the highway—in excavation, or rough quarry floors, or rough oil field, or logging trails | Unimproved or rather rough highways, or some off-the-highway work | All pavement, improved roads with some rough streets or highways | All good, smooth roads |
| Capacity Rating Factor | .92 | 1.00 | 1.05 | 1.07 |

| SPEED—M.P.H.—NORMAL RUNNING SPEED— | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 | 65 |
|---|---|---|---|---|---|---|---|---|---|---|
| Capacity Rating Factor | 1.07 | 1.05 | 1.03 | 1.02 | 1.01 | 1.00 | 1.00 | 1.00 | .98 | .96 |

Next operating condition shown in the table is *method of loading.* There is a comment on the *Truck Requirement Analysis* form which says loading is by hand. *Hand loading,* in Table 1, has a capacity rating factor of 1.0.

*Road conditions,* the third operating condition, indicates paved roads with some rough cobblestone streets. In the table, the heading, *all good, smooth roads,* fits the conditions of the bottling company. Capacity rating factor is 1.07.

The speed is 40 miles per hour, with a capacity rating factor of 1.01 in the table.

Now to find the total capacity rating factor for this particular truck operation, the next step is to multiply the four factors together as follows:

**CALCULATING THE TOTAL CAPACITY RATING FACTOR**

| 1.05 | × | 1.00 | × | 1.07 | × | 1.01 | = | 1.13 |
|---|---|---|---|---|---|---|---|---|
| Type of Load | | Method of Loading | | Road Conditions | | Speed | | Total Capacity Rating Factor |

According to *Total Capacity Rating Factors and Gross Rating Classes,* given above, the total factor of 1.13 is over the range for a Class A gross vehicle weight rating. Therefore, a truck model is required for the Beverage Bottling Co. of Midcity, Ohio, whose Class A gvw rating, increased by 10 per cent, is approximately the gross weight of the truck that has been used in this example. In Step 2, page 10, the truck operating gross weight was estimated to be 18,900 lb. If a truck model is found, therefore, whose Class A gvw rating when multiplied by 1.10 (which is the same as adding 10 per cent) is approximately equal to 18,900 lb, that model will be satisfactory.

## *Selecting the Correct Truck Model*

NOW all the information from the standpoint of operation is ready for choosing the truck model to fit the job requirements. To do this, data is needed from the manufacturer on the specifications of various trucks of the type desired. From these specifications there should be a selection of a truck whose Class A, B, C (or A plus 10 per cent) rating is approximately equal to the gross weight needed for the operation. A choice may be considered correct so long as the rating of the model selected is not more than 5 per cent less than the operating gross weight of the truck will be. For example, an operation in Class C (severe) service requires a truck whose gross weight will be 19,500 lb. In the manufacturer's line, a model with a Class C gvw rating of 19,000 lb would be a satisfactory choice since its rating is approximately equal to the required gvw (within less than 5 per cent).

## *Wheelbase—A Part of Model Selection*

CHOOSING the correct model to match the gross vehicle weight rating for the class of service, is the first part of model selection. There is more. The correct model designation can hardly be considered complete without the wheelbase being specified. Most truck manufacturers build each model in several different standard wheelbases, for the length of wheelbase chosen has an effect on satisfactory operation and usefulness of truck, as may be seen by considering these factors:

1. Turning radius varies in direct proportion to the length of wheelbase.
2. The way the truck rides depends on the proper balance of weight.
3. Ease of steering and handling depends on not exceeding the rated capacity of the front end.
4. Traction or grip of the tires on the road for driving, braking, and steering under different road conditions, calls for sufficient amount of weight on the front tires.
5. Safe loading of the truck frame and of the individual axles, springs, and tires means not exceeding either front- or rear-axle capacity ratings.
6. Amount of load that can be carried, without exceeding the laws or regulations governing axle and truck gross weights, is dependent on having the load distributed so that each axle carries its maximum share.

The first item, turning radius of the truck or tractor, is directly proportioned to the length of wheelbase. Many operations require the vehicle to be as short as possible to facilitate maneuvering at loading docks and alleyways. With the exception of turning radius, all the other factors are a matter of weight distribution. These factors will be correct if the wheelbase is calculated to give the correct weight distribution—the right proportion of weight at the front axles and at the rear axles.

## *Finding Distribution of Gross Weight*

TO BEGIN calculating the correct wheelbase requires first finding the distribution of gross weight that is desired for the fully loaded vehicle standing on level ground. Weight distribution limits depend on four points:

1. The capacity of the axles.
2. Tire capacity.
3. Legal limits governing axle loads.
4. Correct balancing of load between front and rear.

The first factor, the capacity of axles, will enter the discussion later in this step after the actual weights on each axle have been figured. The second factor, tire capacity, fits into Step 4. The third factor, legal limits governing axle loads, influences the choice of gross weight distribution in many operations. The truck must carry as much payload as possible and at the same time both axle loads and gross loads must be legal. Since State laws regulating legal limits change from time to time, the operator should consult the latest information on laws before concluding the solution of any such problems. (State laws concerning weight distribution are compiled in *State Restrictions on Motor Vehicle Sizes and Weights,* a continuous service published by the National Highway Users' Conference, Washington, D. C. (Highway authorities in each State also furnish such information.)

The fourth factor, correct balancing of load between front and rear, is one of the most important limits on weight distribution since it concerns proper traction, safety, and ease of handling the truck—as will be shown here.

How can this correct balance load be achieved? By keeping both the percentage of total gross weight on the rear and the percentage of total gross weight on the front within prescribed

limits. As a guide to correct balance, a set of limits is recommended based on truck design and experience. The limits are presented in Table 2, *Recommended Percentage of Gross Weight at Front and Rear Axles*, and set up according to: (1) The types of vehicles; and (2) the types of service. By using this table, the correct balance can be determined for the type of truck required by the user, operating under the particular service conditions.

In cases where speeds are high, wheelbases are short, or when icy and slippery roads are used, the *maximum* percentage should be favored for the front axle. Finding the weight in pounds at the front and rear is simple arithmetic after the percentages have been selected from the table. For example, if the gross weight of a conventional truck in highway service is 30,000 lb, then the weight at the front axle from the average figure on the chart would be 25 per cent of 30,000 or 7,500 lb, and the weight at the rear axle would be 75 per cent of 30,000 or 22,500 lb.

## TABLE 2—RECOMMENDED PERCENTAGE OF GROSS WEIGHT AT FRONT AND REAR AXLES

| TYPE OF SERVICE | CONVENTIONAL TYPE | | | | | | C.O.E. TYPE | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Two Axle 4 wheel | | | Three Axle 6 wheel | | | Two Axle 4 wheel | | | Three Axle 6 wheel | | |
| | Min. | Ave. | Max. | Min. | Ave. | Max. | Min. | Ave. | Max. | Min. | Ave. | Max. |
| NORMAL HIGHWAY: | | | | | | | | | | | | |
| Front | 21 | 25 | 29 | 20 | 22 | 24 | 27 | 30 | 33 | 23 | 25 | 27 |
| Rear | 71 | 75 | 79 | 76 | 78 | 80 | 67 | 70 | 73 | 73 | 75 | 77 |
| OFF THE HIGHWAY IN SOFT GOING: | | | | | | | | | | | | |
| Front | 20 | 22 | 24 | 19 | 20 | 21 | 20 | 22 | 24 | 19 | 20 | 21 |
| Rear | 76 | 78 | 80 | 79 | 80 | 81 | 76 | 78 | 80 | 79 | 80 | 81 |

*Table 2. Calculating the weight at front and rear axles. Percentage of gross weight at rear times gross weight equals weight at rear. Percentage of gross weight at front times gross weight equals weight at front*

## *Determining the Correct Wheelbase*

TO FIND the wheelbase that gives this load distribution with a given length of body, the procedure shown below may be used.

### FORMULA FOR WHEELBASE

$$\text{WHEELBASE} = \frac{\text{B} \times \text{weight of body and payload}}{\text{gvw at rear axle} - \text{chassis weight at rear axle}}$$

B is distance from center line of front axle to center line of body and load

Weight of body and payload is available from the "Truck Requirement Analysis" form

GVW at rear axle may be calculated by multiplying the gross vehicle weight by the recommended percentage of load on the rear axle (taken from Table 2)

Chassis weight at rear axle. To get this figure, first find the total chassis weight by subtracting the body and payload weight from the gross weight. Then multiply this total chassis weight by the percentage of chassis weight at the rear, which is taken from Table 3

Here is an example of how the formula for wheelbase is used. In this operation the following facts about the truck are already known.

1. Type of unit: Straight truck, two-axle, conventional type.
2. Body length (outside): 16 ft. 6 in.

## TABLE 3—GUIDE TO ESTIMATING PERCENTAGE OF CHASSIS WEIGHT AT REAR AXLE

| | |
|---|---|
| CONVENTIONAL 4-WHEEL CHASSIS: | Rear chassis weight = 50% × total chassis |
| CONVENTIONAL 6-WHEEL CHASSIS: | Rear chassis weight = 60% × total chassis |
| C.O.E. 4-WHEEL CHASSIS: | Rear chassis weight = 45% × total chassis |
| C.O.E. 6-WHEEL CHASSIS: | Rear chassis weight = 55% × total chassis |

NOTE: These figures have been evolved from a general formula and will serve here only as a quick and ready method of making an estimate of rear chassis weight for trucks and truck tractors

3. Gross weight: 24,000 lb.
4. Payload and body weight: 15,300 lb.

At this point the only figure from the known facts about unit, which can be put directly into the wheelbase formula is the weight of body and payload. The other three figures for the formula must be found.

To determine B, first a truck model from the manufacturer's specifications with a gross weight approximately 24,000 lb is selected. Also from the manufacturer's specifications on this model, the following dimensions must be looked up: Distance from center line of front axle to back of cab (AC), and distance from back of cab to front of body (C). Assuming AC is found to be 76 in. and C is found to be 2 in., and by adding AC plus C plus ½BL (which is one-half of body length 16 ft 6 in., or 99 in.), the result is B, or 177 in.

The next step is to find the figure for gvw at rear axle, required in the formula. Assuming this is an average operation over normal highways, table 2, *Recommended Percentage of Gross Weight at Front and Rear Axles*, shows 75 as the rear per cent. Multiplying 75 per cent times the gross weight or 24,000 lb gives the gvw at rear axle of 18,000 lb.

The fourth element in the formula, chassis weight at rear axle can be calculated in these steps. First, the chassis weight should be found:

CHASSIS WEIGHT = Gross weight − body and payload weight
CHASSIS WEIGHT = 24,000 − 15,300 = 8700

Then, an estimate of the chassis weight at rear can be found from Table 3 *General Guide to Estimating Percentage of Chassis Weight at Rear Axle.*

### FOR CONVENTIONAL 4-WHEEL CHASSIS

Rear chassis weight = 50% × total chassis
Rear chassis weight = 50% × 8700 lb
Rear chassis weight = 4350 lb

Now all the four values needed in the formula have been found. B is 177 in., weight of body and payload is 15,300 lb, and chassis weight at rear axle is 4,350 lb. Substitute these values in the formula and there is the wheelbase.

$$\text{WHEELBASE} = \frac{177 \times 15{,}300}{18{,}000 - 4350} = 197\tfrac{1}{2}$$

All that remains now is to refer to the manufacturer's specifications and select a wheelbase of this length. For the model in the example, the closest wheelbase was 196 in., which was the one chosen.

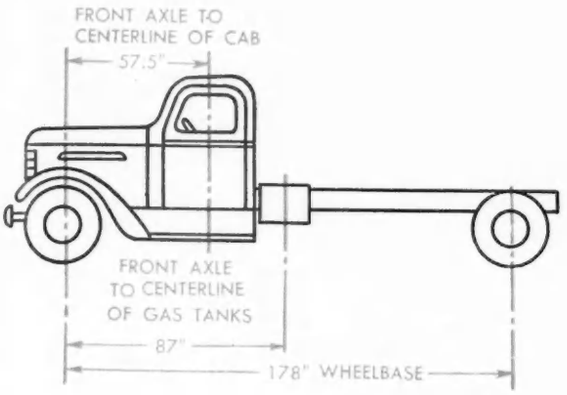
By the method described over the previous pages, the exact load distribution can be determined, and a specific wheelbase selected which is closely matched to the job. There is another way frequently used in finding the wheelbase dimension—by working from the manufacturer's specification figures. Most manufacturers' data books have a tabulation of *recommended body lengths* with maximum and minimum body lengths for each

## EXAMPLE 1

### HOW EXACT CHASSIS WEIGHT ON EACH AXLE IS DETERMINED

**THE TRUCK:**

Type of unit: Straight truck, two-axle, conventional type. Tires: 9.00—20. Wheelbase: 178 in. Optional equipment: Extra gas tanks, two 44-gal, one on each side of cab.




| THE CALCULATIONS: | Weight at Front Axle | Weight at Rear Axle | Total Weight |
|---|---|---|---|
| Chassis weight for typical 178-in. wheelbase (from manufacturer's specifications) | 3,314 | 3,241 | 6,555 |
| Cab weight (from manufacturer's specifications) | .... | .... | 580 |
| Portion of cab weight at rear axle = total × distance from front axle / wheelbase | | | |
| 580 × 57.5 / 178 = 187 | ..... | 187 | |
| Portion of cab weight at front axle is the difference: 580 − 187 = 393 | 393 | | |
| EXTRA GAS TANKS—two 44-gal, one each side back of cab. Total extra weight with 88 gal of gas (from manufacturer's specifications) | ..... | ..... | 836 |
| Portion of tank weight at rear axle = total × distance from front axle / wheelbase | | | |
| 836 × 87 / 178 = 410 | ..... | 410 | |
| Portion of tank weight at front axle is the difference: 836 − 410 = 426 | 426 | | |
| **THE RESULT:** | | | |
| Total chassis weight without body and payload | 4,133 lb | 3,838 lb | 7,971 lb |

wheelbase. By consulting these specifications, a quick estimate of the wheelbase may be ascertained. However, such an estimate of wheelbase is only approximately correct and will not give the accurate load distribution data necessary for correct application.

### *Double Checking Load Distribution*

IN THE calculations a few paragraphs back, when wheelbase was being determined, some figures on chassis weight and load distribution were used. But actually, the division of weight at front and rear cannot be accurately measured until the exact wheelbase is selected. So a very careful estimate of chassis weight and load distribution were made and these figures used in the formula. Now, however, since the wheelbase is known, a double check can be made on the estimated chassis weight and load distribution figures, and proved either right or wrong. After the double check, when actual chassis weight figures at front and rear are known, these figures can be added with body and payload weight at front and rear to find the exact gross weights.

Gross weight distribution is a final check on three things:

1. Front- and rear-axle limitations
2. Tire capacities
3. Whether axle weights are within legal limits.

Number One move in double checking the chassis weight is to look up the manufacturer's specifications for the truck model. The specifications usually list the total chassis weight, and the front and rear weights for each wheelbase. To find the exact total weight of the chassis for a specific job, and the exact distribution of chassis weight, here is the procedure to be followed. First, the chassis weights given by manufacturers' specifications are listed. Then, the distribution of the weights of the cab, proper size tires, and optional equipment are calculated with this formula:

$$\text{WEIGHT OF ITEM AT THE REAR AXLE} = \frac{\text{total weight of item} \times \text{distance from front axle}}{\text{wheelbase}}$$

After the distribution of weight of these items is found, these figures are added to the front and rear chassis weights listed in the truck model specifications, and the total is the exact chassis weight distribution. As an illustration of how the exact chassis weight distribution is figured, an example (1) is shown on this page. Following through Example 1 gives these results: Total chassis weight, chassis weight at front axle, chassis weight at rear axle.

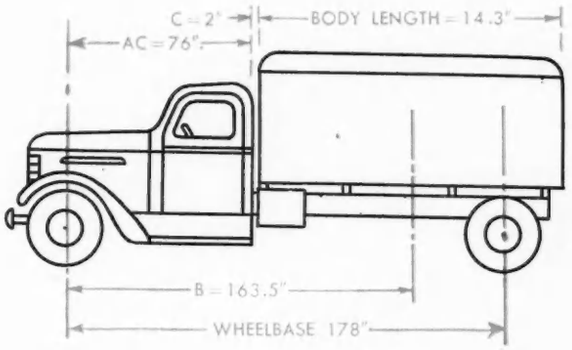
The next double check, after the exact chassis weights have been calculated, is on gross weight and gross weight distribution. The chassis weights front and rear should be added to the

## EXAMPLE 2

### HOW EXACT GROSS WEIGHT ON EACH AXLE IS DETERMINED

**THE TRUCK:**

Type of unit and equipment: Same as Example 1, plus—Body length (outside): 14.3 ft. Payload and body weight: 18,000 lb.




| THE CALCULATIONS: | Weight at Front Axle | Weight at Rear Axle | Total Weight |
|---|---|---|---|
| Weight of chassis (from previous page) | 4,133 | 3,838 | 7,971 |
| Weight of body and payload, total | ..... | ..... | 18,000 |
| Portion of weight on rear axle = total × distance from front axle / wheelbase | | | |
| 18,000 × 163.5 / 178 = 16,533 | ..... | 16,533 | |
| Portion of weight on the front axle is the difference: 18,000 − 16,533 = 1,467 | 1,467 | | |
| **THE RESULT:** | | | |
| Gross weight | 5,600 | 20,371 | 25,971 |
| Gross weight distribution % | 21.5 | 78.5 | |

### 6-WHEEL TRUCKS

***Throughout the discussion in this step on selecting the wheelbase and computing load distribution, the remarks point toward 4-wheel trucks. Figuring the wheelbase and load distribution on 6-wheel (3-axle) trucks is exactly the same as for 4-wheel trucks. The only difference is that on a 6-wheel truck, the 2 rear axles are considered as a unit. So, the effective wheelbase is measured from the center line of the front axle to a center line midway between the 2 rear axles. In the case of some trailing axle attachments which are commonly used to convert 4-wheel, 2-axle trucks into 6-wheel, 3-axle trucks, the effective center line of the tandem rear axle of the converted unit is closer to the driving axle in order to give more traction on the driving tires. When these trailing axles are used, therefore, the manufacturer of the trailing axle attachment should be consulted and the effective center line in relation to the driving and trailing axles obtained from him***

weight of the body and payload front and rear, and the result will be the gross weight figures. See Example 2.

By going through the two double checks shown, all the guesswork is removed from the problem of load distribution. After the wheelbase has been definitely chosen—by estimating the chassis weight and gross weight distribution—then the procedure here can be used to find the exact gross weight on each axle. If this safety precaution is taken, then absolute load distribution control is in the hands of the operator before the truck is purchased. Also, a step has been taken in the right direction of longer truck life and greater dependability.

## *Legal Limits and Load Distribution*

IN THE examples showing how wheelbase and load distribution are calculated, the legal limits have not been a consideration. It was assumed the operation was a type where the load was so far below the legal limits on payload and load distribution that the law could almost be disregarded. What does happen in an operation where the truck must carry the maximum possible payload within the legal restrictions?

The problem of wheelbase and load distribution must be approached from a different angle. The formula for wheelbase is the same in both cases: Wheelbase equals B times body and payload weight, divided by gross weight at rear, minus chassis weight at rear. But the figures that are available to be put into the formula are different when building up the wheelbase on the legal limits. For example, previously the status of the four elements of the formula was as follows:

B was easily found from manufacturer's specifications on the model.

Body and payload weight was known from the *Truck Requirement Analysis* form.

Gross weight at rear was estimated.

Chassis weight at rear was estimated.

When trying to find the wheelbase of a truck that is going to carry the maximum payload the law allows, the status of the four elements in the formula would be this:

B again would have to be found from manufacturer's specifications.

Body and payload weight is not known.

Gross weight at rear would be easily found since it is probably determined by law.

Also chassis weight at rear would easily be found.

The basic difference between this information for the formula and the information in the first listing is in the payload and gross weight figures. Instead of the payload weight being known, it is the X in the formula because the operator wants to carry as much as the law allows. Instead of the gross being estimated, the exact weight is known since it is set by law. Most States have laws which set the maximum load per axle. Also in some States, the maximum gross weight of the truck is controlled by the bridge-type formula: 750 (L plus 40), L being the distance in feet between first and last axle. [This formula varies in many States—from 650 (L plus 40) in some States, to 800 (L plus 40) in others.]

An example of how to figure wheelbase and load distribution for a straight truck, when the operator wants to carry the maximum payload allowed by law, will clarify the procedure. Here is a typical problem: The Gasoline Hauling Co. of North City would like a cab-over-engine type of tank truck to carry the maximum weight, in gallons of gasoline, allowed in the States. The State laws restrict the maximum gross weight by the formula: 750 (L plus 40). Legal maximum load per axle in the State is 22,400 pounds. The detailed calculation will be found in Example 3.

Usually at this point the wheelbase dimension in inches is obtained and calculations are finished. But there is a difficulty here.

## EXAMPLE 3

### CALCULATING WHEELBASE AND LOAD DISTRIBUTION TO GET MAXIMUM LEGAL PAYLOAD

**THE TRUCK:**

Class A gross vehicle weight rating: 36,000 lb.
Capacity rating, front axle (from mfr. spec.): 10,000 lb.
Capacity rating, rear axle (from mfr. spec.): 26,000 lb.

**THE LAW:**

Maximum gross weight is limited to the formula: 750 (L + 40)
Legal maximum load per axle is: 22,400 lb.

**THE CALCULATIONS:**

**FIND THE TOTAL GROSS WEIGHT:**

Since the legal maximum load per axle is 22,400 lb on the rear, and the capacity rating on the front is 10,000 lb, gross weight is a sum of the two:

Legal limit on rear plus capacity rating on front equals gvw
22,400 + 10,000 = 32,400 lb. TOTAL GROSS WEIGHT

**FIND THE PERCENTAGE OF THE TOTAL GROSS WEIGHT ON THE FRONT AXLE:**

$$\frac{\text{10,000 lb on front axle}}{\text{32,400 lb gross weight}} \times 100 = \text{30.8 PER CENT OF LOAD ON FRONT AXLE}$$

This percentage is within the limits given in Table 2, "Recommended Percentage of Gross Weight at Front and Rear Axles," for a straight truck, two-axle, cab-over-engine type. This percentage will be important later in selecting the wheelbase and body length. An attempt should be made to select those lengths so the weight distribution nearly matches this percentage.

**FIND THE BODY AND PAYLOAD WEIGHT:**

To calculate the body and payload weight which a truck with a 32,400-lb gross weight can handle, use the formula:

$$\text{Body and payload weight} = \frac{\text{gross weight} - 3500}{1.34}$$

$$\text{Body and payload weight} = \frac{32{,}400 - 3500}{1.34} = 21{,}600$$

(from the formula for estimating gross weight, page 10)

BODY AND PAYLOAD WEIGHT equals 21,600 lb.

According to the information from tank body manufacturers, a tank body in this size would handle approximately 3000 gal and would be about 21 ft long.

**FIND THE WHEELBASE:**

A wheelbase that gives 22,400 lb on the rear axle is found from the formula:

$$\text{WHEELBASE} = \frac{\text{B} \times \text{weight of body and payload}}{\text{gvw at rear axle} - \text{chassis weight at rear}}$$

B can be found by using the figure of 21 ft for body length, as shown here:

$B = \frac{1}{4}BL + C + AC$
$B = 126 + 2 + 37 = 165$

Weight of body and payload was previously found: 21,600 lb. GVW at rear axle is the legal maximum load of 22,400 lb. Chassis weight at rear can be found by first subtracting body and payload weight from the gross weight as follows:

32,400 − 21,600 = 10,800 TOTAL CHASSIS WEIGHT

According to the chart, "General Guide to Estimating Percentage of Chassis Weight at Rear Axle" (page 00), the portion of total chassis weight on the rear axle, for cab-over-engine trucks is:

45 per cent times 10,800 equals 4860 lb. CHASSIS WEIGHT AT REAR

**THE RESULT:**

Substituting these figures in the formula for wheelbase gives:

$$\text{WHEELBASE} = \frac{165 \times 21{,}600}{22{,}400 - 4860} = 203 \text{ in.}$$

## EXAMPLE 4

### RECALCULATING THE WHEELBASE:

The new tank length can be calculated in terms of the dimension B, by converting the wheelbase formula:

$$\text{WHEELBASE} = \frac{B \times \text{weight of body and payload}}{\text{gvw at rear axle} - \text{chassis weight at rear}}$$

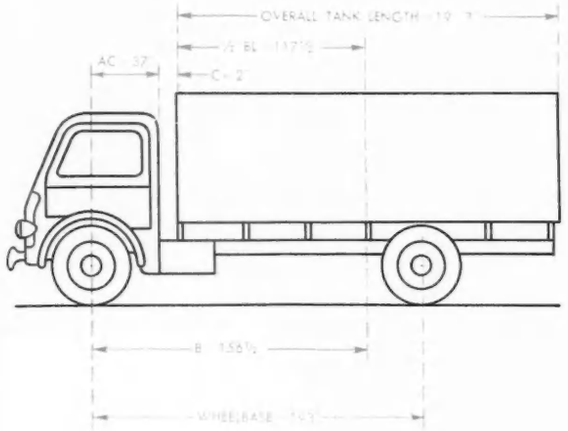
$$\text{Therefore, } B = \frac{\text{wheelbase (gvw at rear axle} - \text{chassis weight at rear)}}{\text{weight of body and payload}}$$

$$B = \frac{193\ (22{,}400 - 4860)}{21{,}600} = 156\text{½}$$

B = 156½ in.

The tank length required to give this 156½-in. dimension for B, is:

BL = (B − C − AC) × 2
BL = (156½ − 2 − 37) × 2
BL = 235 in., or 19 ft 7 in., tank length




THE RESULT:

Wheelbase for straight truck (two-axle) cab-over-engine type, with tank body is: 193 in.

### CALCULATIONS FOR LOAD DISTRIBUTION

| | Front | Rear | Total |
|---|---|---|---|
| CHASSIS WEIGHT FOR 193-IN. WHEELBASE (from manufacturer's specifications) | 5,940 | 4,860 | 10,800 |
| TANK AND LOAD WEIGHT, TOTAL | ..... | ..... | 21,600 |
| Portion of weight on rear axle: total × distance from front axle / wheelbase = 21,600 × 156.5 / 193 = | ..... | 17,540 | |
| Portion of weight on the front axle is the difference: 21,600 − 17,540 = | 4,060 | | |
| THE RESULT: | | | |
| GROSS WEIGHT | 10,000 | 22,400 | 32,400 |
| GROSS WEIGHT DISTRIBUTION PER CENT | 30.8 at front axle | 69.2 at rear axle | total |

The wheelbase is found to be 203 in. According to the calculations, 203 in. will give the maximum payload allowed by law for this cab-over-engine tank truck. But checking over the specifications for the model truck, the nearest standard wheelbase is 193 in. If this wheelbase is used with the same body and payload, the shorter length will cause some extra weight to fall on the rear axle, exceeding the legal limit of 22,400 lb. So the 21-ft tank is too long. A shorter, more squat tank design must be used. The question now becomes, "How short must the tank be to give 22,400-lb rear-axle loading, with 193-in. standard wheelbase?" This can be figured as shown in Example 4.

By using the 193-in. wheelbase instead of the 203-in. wheelbase the gross weight now is within the legal limits of 22,400 lb on the rear axle, and the weight distribution tallies with the recommended 30.8 per cent on the front axle (Example 3). This decision to shorten the tank length, as opposed to lengthening the wheel base, has been found generally more economical and desirable.

Special wheelbases are undesirable not only from the standpoint of economy, but also from the standpoint of interchangeability of bodies in an operator's fleet. The Society of Automotive Engineers' established standards on dimension (CA cab to axle) of 60, 72, 84, 102, 138, and 156 in. These standards were set up for manufacturers so a truck operator could easily remove a body from one chassis and install it on a new or different chassis of any make with a minimum of expense, and with a correct weight distribution.

Frequently in figuring wheelbase, when legal limits are the only stop on payload, the computations are much less lengthy. This example was chosen to show the extent to which an operator must go if his goal is correct application. All the steps to be gone through are here. When the methods are followed, knotty wheelbase and load distribution problems, further complicated by considerations of legal limits on axles and on maximum gross weight, can be quickly and easily solved.

## *Fifth-Wheel Location*

IN THE application of tractors, an extra factor enters the discussion of wheelbase and weight distribution—the location of the fifth wheel. The distribution of load on the front axle and rear axle of the tractor depends on where the fifth wheel is mounted. Three conditions determine where the fifth wheel will be mounted, and the wheelbase of the tractor:

1. The kind of weight distribution needed to best fit the operation.
2. The clearance between tractor and semitrailer.
3. The maneuverability required.

–Tractor wheelbase is often based strongly on the fact that for maneuverability, a short wheelbase tractor is required. With the shortest wheelbase tractor (CA dimension of 60 in., the location of the fifth-wheel king pin is back near the center line of the rear axle. The fifth wheel must be back that far to allow body clearance between the semi-trailer and the cab when the unit tractor turns corners, etc. In all cases, the fifth-wheel center line should be at least 3 in. ahead of the rear axle. Less than 3 in. has the effect of moving the load-thrust line behind the rear wheels when the tractor is climbing a hill.

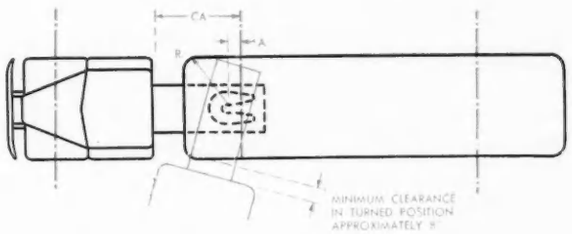



*Fig. 2. Diagram showing cab-to-body clearance, a factor in tractor wheelbase and fifth-wheel location*

Tractor wheelbase and the location of fifth wheel should make allowance for the second condition—clearance needed between the back of the tractor cab and the front of the semi-tractor body. This clearance will be sufficient for normal conventional tractor cabs when the dimension from back of cab to center of fifth wheel (CA minus A in Fig. 2) is over 8 in. greater than the distance from center of fifth wheel to the front corner or side of the semi-trailer (R). Greater clearance is required for some high c.o.e. cabs and sleeper cabs. The dimension should be enough to allow ample clearance between the back of cab and the front of trailer in all positions as shown in the diagram.

On short wheelbase tractors, the usual location of the fifth wheel is about 3 to 7 in. ahead of the rear axle. In many of the medium-length wheelbase tractors where more weight for traction on the front tires is desired (and where clearance between the back of the cab and semi-trailer permits), the center line of the fifth wheel is frequently located as far as 12 in. ahead of the rear axle.

Legal limits on axles and on maximum gross weight also have a bearing on where the fifth wheel is placed on the tractor. These laws often make it advisable to put as much weight on the front axle as possible. Then the distance from center line of fifth wheel to center of the rear axle may need to be consider-

ably more than 12 in. In these cases, it should be remembered that a long portion of the tractor will be underneath the semi-trailer behind the fifth wheel. Clearance between the rear end of the tractor and the underrigging of the trailer, the trailer frame, and trailer supports should be checked in applications of this kind.

### *Tractor-Semi Load Distribution*

WEIGHT distribution figures for tractor-trailer combinations involve the same principles as for straight trucks. Calculating the weight distribution required for a tractor-trailer, and how this weight is divided between axles, is the same as for trucks. The method is to first work with the semi-trailer as a unit and find how the total of trailer chassis weight and trailer body and payload weight is distributed between the fifth wheel and the semi-trailer rear axle. After this is found, the weight at the fifth wheel is divided and the figures obtained on the distribution of weight at the tractor front axle and rear axle.

Calculating the wheelbase for a tractor is basically the same as for a truck—if the tractor wheelbase is not limited by turning radius requirements. The same formula is used, except that weight of body and payload on the truck, becomes weight at fifth wheel on the tractor—as shown in Example 5.

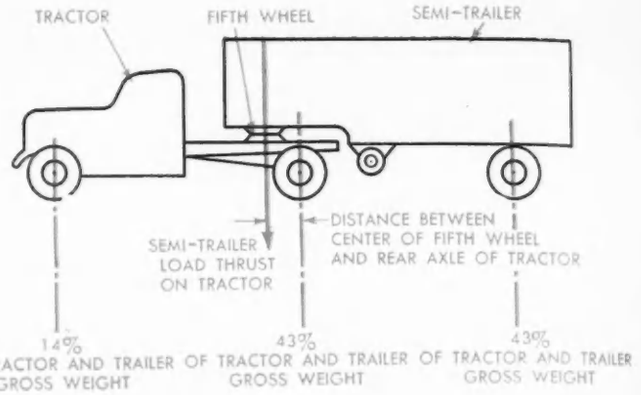



*Fig. 3. Diagram showing typical load distribution for conventional tractor and semi-trailer combination. Calculations are essentially same as for trucks, although the first requirement is to work with the semi-trailer as a unit then making similar calculations for the tractor*

## EXAMPLE 5

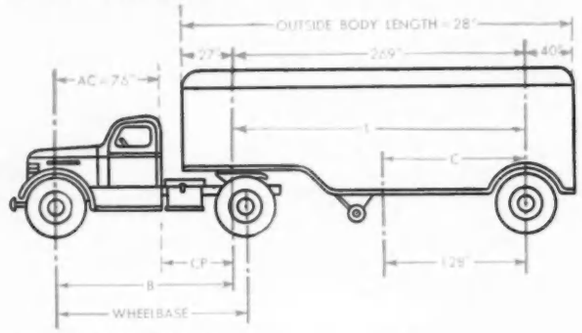
### CALCULATING THE WHEELBASE AND LOAD DISTRIBUTION ON A TRACTOR-SEMITRAILER

**THE UNIT:**

Trailer chassis and body weight: 9000 lb. Payload weight: 24,000 lb. Tractor chassis weight: 9000 lb.

Maximum legal limit on tractor rear axle: 18,000 lb.

Trailer chassis and body weight at fifth wheel: 3200 lb. Trailer chassis and body weight at trailer axle: 5800 lb.




**THE CALCULATIONS:**

**FIND THE WHEELBASE:**

$$\text{WHEELBASE} = \frac{B \times \text{weight at fifth wheel}}{\text{gvw at rear axle} - \text{tractor chassis weight at rear axle}}$$

B is the sum of the distance from front axle to back of cab (AC, from manufacturer's specifications), plus distance from back of cab to center line of fifth wheel (CP). The minimum dimension CP is determined by the clearance requirement, mentioned previously. In this particular case, CP must be at least 57 in.

$$B = AC + CP$$
$$B = 76 + 57 = 133$$

Weight at fifth wheel. The trailer chassis and body weight is already known to be 3200 lb at the fifth wheel, and 5800 lb at the trailer axle. Adding these figures to the payload on each axle will give the weight at fifth wheel.

**FIRST, FIND THE PERCENTAGE OF PAYLOAD WEIGHT AT THE FIFTH WHEEL:**

$$\text{Percentage of payload at fifth wheel} = \frac{C}{L} \times 100$$

L is the distance from king pin to trailer axle in in.
C is distance from center of trailer body to axle in in.

$$\text{Percentage of payload at fifth wheel} = \frac{128}{269} \times 100$$

Percentage of payload at fifth wheel = 47.6%

**FIND THE DISTRIBUTION OF PAYLOAD WEIGHT ON TRAILER:**

Payload weight on fifth wheel = total payload × 47.6%
Payload weight on fifth wheel = 24,000 × 47.6% = 11,424
Payload weight on fifth wheel = 11,424 lb.
Payload weight on trailer axle = total payload − weight at fifth wheel
Payload weight on trailer axle = 24,000 − 11,424 = 12,576

**FIND DISTRIBUTION OF TOTAL WEIGHT OF TRAILER CHASSIS, BODY, AND PAYLOAD:**

Total weight at fifth wheel of trailer chassis, body and payload equals chassis and body weight at fifth wheel plus payload weight on fifth wheel.
Total weight at fifth wheel = 3200 + 11,424 = 14,624
Total weight at fifth wheel = 14,624 lb.
(Similar addition gives weight at trailer axle:
Total weight at trailer axle = 5800 + 12,576 = 18,376

GVW at rear axle. The legal limit of 18,000 lb at the rear axle can be used here for solving the formula.

Tractor chassis weight at rear axle. Table 3, "General Guide to Estimating Percentage of Chassis Weight at Rear Axle" shows:

"FOR CONVENTIONAL FOUR-WHEEL CHASSIS: Rear chassis weight = 50% × total chassis."
Rear chassis weight = 50 × 9000 lb. = 4500
Rear chassis weight = 4500 lb.
Putting these figures into the formula for wheelbase:

$$\text{WHEELBASE} = \frac{B \times \text{weight at fifth wheel}}{\text{gvw at rear axle} - \text{tractor chassis weight at rear axle}}$$

$$\text{WHEELBASE} = \frac{133 \times 14,624}{18,000 - 4500} = 144 \text{ in.}$$

According to the manufacturer's specifications, the closest tractor wheelbase to the 144 required is 148 in. So in order to put a total of 18,000 lb on the rear axle of a tractor with a 148-in wheelbase, a new dimension B will have to be calculated, as shown here:

$$B = \frac{\text{wheelbase (gvw at rear axle} - \text{tractor chassis weight at rear)}}{\text{weight at fifth wheel}}$$

$$B = \frac{148 \times (18,000 - 4500)}{14,624} = 136 \text{ in.}$$

**THE RESULT:**

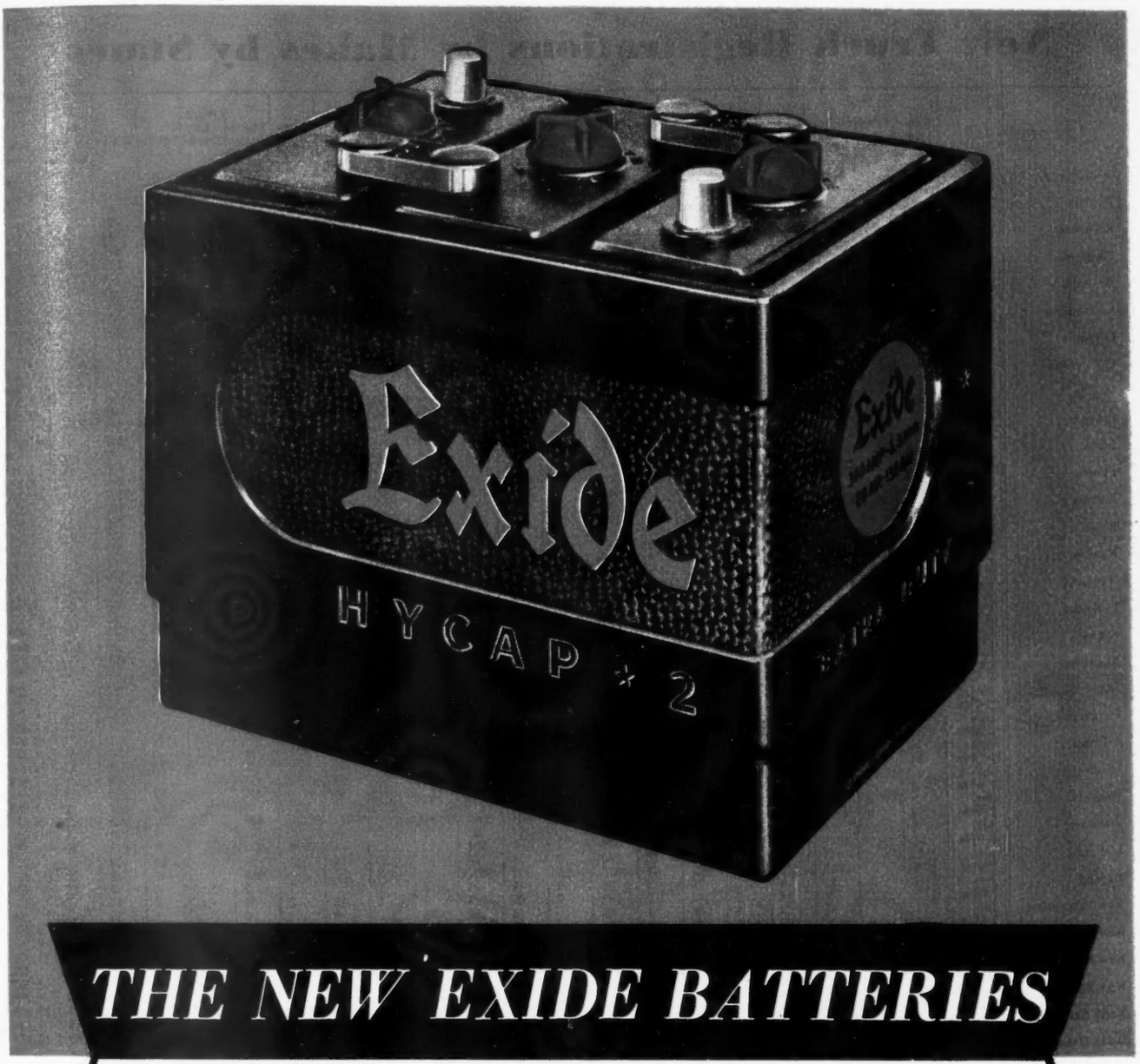
A tractor of 148-in wheelbase has been found necessary in order to have 18,000 lb (the legal limit) on the rear axle and proper clearance with cab

From this wheelbase and the formula for B above, the B dimension which locates the fifth wheel from the front axle was found to be 136 in

The difference or 148 minus 136 is 12 in which is the distance that the fifth wheel is to be placed ahead of the rear axle.

*(Copyright 1947, The White Motor Co., Cleveland, Ohio)*

**Next Month:** *STEP 4—"Selection of Correct Size and Type of Tires"* & *STEP 5—"Determining Correct Type and Capacity of Rear Axles"*

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# New Truck Registrations by Makes by States*

| STATE | | Auto-car | Brock-way | Chev-rolet | Dia-mond T | Divco | Dodge | Fed-eral | Ford | FWD | GMC | Inter-national | Mack | Osh-kosh | Reo | Ster-ling | Stude-baker | Ward La France | White | Willys | Al Others | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Alabama | July | ..... | ..... | 340 | 3 | ..... | 193 | 4 | 372 | ..... | 40 | 185 | 4 | ..... | 14 | ..... | 52 | ..... | 14 | 106 | 3 | 1,330 |
| | 7 Mos. | 3 | ..... | 2712 | 49 | 12 | 1399 | 47 | 2498 | 1 | 641 | 1285 | 41 | ..... | 172 | ..... | 309 | 1 | 107 | 618 | 44 | 9,939 |
| Arizona | July | ..... | ..... | 135 | 4 | 2 | 83 | 2 | 122 | ..... | 32 | 63 | 3 | ..... | 9 | ..... | 32 | ..... | 2 | 42 | 6 | 537 |
| | 7 Mos. | 4 | ..... | 629 | 13 | 4 | 338 | 16 | 638 | 2 | 187 | 224 | 6 | ..... | 69 | 2 | 155 | ..... | 30 | 171 | 29 | 2,517 |
| Arkansas | July | ..... | ..... | 199 | 8 | ..... | 207 | 6 | 483 | ..... | 80 | 127 | 3 | ..... | 16 | ..... | 53 | ..... | 4 | 99 | 3 | 1,288 |
| | 7 Mos. | ..... | ..... | 2618 | 55 | ..... | 1152 | 23 | 2637 | ..... | 541 | 916 | 14 | ..... | 69 | ..... | 348 | ..... | 45 | 515 | 16 | 8,949 |
| California | July | 29 | 5 | 677 | 44 | 25 | 804 | 14 | 1061 | 8 | 306 | 528 | 57 | ..... | 35 | 21 | 307 | 1 | 53 | 200 | 86 | 4,261 |
| | 7 Mos. | 233 | 32 | 7434 | 274 | 187 | 4800 | 89 | 7239 | 102 | 2683 | 3791 | 197 | ..... | 354 | 78 | 2073 | 2 | 306 | 1118 | 551 | 31,543 |
| Colorado | July | 3 | ..... | 238 | 10 | 3 | 86 | 2 | 200 | 4 | 27 | 98 | ..... | ..... | 6 | ..... | 22 | ..... | 2 | 79 | 4 | 784 |
| | 7 Mos. | 17 | ..... | 1154 | 71 | 30 | 685 | 23 | 1453 | 56 | 328 | 741 | 28 | ..... | 70 | ..... | 230 | ..... | 41 | 354 | 33 | 5,314 |
| Connecticut | July | 13 | 17 | 126 | 15 | 6 | 110 | 21 | 119 | ..... | 27 | 154 | 26 | ..... | 13 | ..... | 36 | ..... | 21 | 45 | 5 | 754 |
| | 7 Mos. | 127 | 97 | 1007 | 82 | 54 | 690 | 99 | 812 | 12 | 302 | 812 | 181 | ..... | 88 | 4 | 257 | ..... | 118 | 207 | 55 | 5,004 |
| Delaware | July | 2 | 2 | 49 | 1 | ..... | 35 | ..... | 62 | 1 | 7 | 44 | 2 | ..... | 4 | ..... | 16 | ..... | ..... | 13 | 2 | 240 |
| | 7 Mos. | 14 | 18 | 359 | 10 | 12 | 309 | 1 | 430 | 4 | 107 | 239 | 13 | ..... | 16 | ..... | 70 | ..... | 17 | 55 | 11 | 1,686 |
| Dist. of Col. | July | 3 | ..... | 54 | 5 | ..... | 59 | 7 | 84 | ..... | 28 | 45 | 3 | ..... | 2 | ..... | 16 | ..... | 2 | 23 | ..... | 331 |
| | 7 Mos. | 6 | 13 | 396 | 35 | 68 | 323 | 14 | 484 | ..... | 182 | 240 | 23 | ..... | 30 | ..... | 77 | ..... | 28 | 33 | 13 | 1,965 |
| Florida | July | 1 | ..... | 165 | 11 | 1 | 183 | 2 | 319 | 1 | 78 | 132 | 15 | ..... | 17 | ..... | 58 | 1 | 10 | 84 | 23 | 1,101 |
| | 7 Mos. | 29 | ..... | 2989 | 92 | 20 | 1305 | 45 | 2666 | 32 | 570 | 1066 | 128 | ..... | 142 | ..... | 443 | 1 | 111 | 488 | 79 | 10,206 |
| Georgia | July | ..... | ..... | 433 | 19 | ..... | 264 | 11 | 511 | ..... | 54 | 206 | 22 | ..... | 24 | ..... | 72 | ..... | 14 | 128 | 9 | 1,767 |
| | 7 Mos. | 6 | 2 | 3037 | 107 | 8 | 1688 | 45 | 3598 | 1 | 640 | 1297 | 109 | ..... | 179 | 1 | 442 | ..... | 160 | 557 | 40 | 11,917 |
| Idaho | July | 4 | ..... | 72 | 6 | 2 | 96 | 11 | 177 | 2 | 43 | 84 | 4 | ..... | 6 | ..... | 54 | ..... | 3 | 77 | 8 | 649 |
| | 7 Mos. | 6 | ..... | 861 | 38 | 14 | 446 | 29 | 833 | 6 | 234 | 509 | 8 | ..... | 46 | 1 | 233 | ..... | 11 | 265 | 40 | 3,580 |
| Illinois | July | 14 | 1 | 458 | 85 | 36 | 480 | 22 | 765 | 1 | 140 | 517 | 48 | ..... | 58 | ..... | 122 | ..... | 57 | 293 | 24 | 3,121 |
| | 7 Mos. | 186 | 47 | 7072 | 682 | 242 | 4180 | 149 | 6597 | 8 | 1705 | 4081 | 227 | ..... | 553 | 8 | 1277 | 3 | 413 | 1127 | 275 | 28,832 |
| Indiana | July | ..... | 2 | 430 | 32 | 9 | 393 | 18 | 498 | 1 | 93 | 441 | 20 | ..... | 31 | ..... | 164 | ..... | 65 | 163 | 24 | 2,384 |
| | 7 Mos. | 24 | 83 | 2975 | 235 | 95 | 2278 | 89 | 3272 | 10 | 963 | 2322 | 101 | ..... | 288 | ..... | 1062 | ..... | 242 | 766 | 155 | 14,960 |
| Iowa | July | ..... | ..... | 458 | 30 | 2 | 252 | 6 | 427 | 1 | 35 | 304 | 13 | ..... | 15 | ..... | 97 | ..... | 8 | 182 | 6 | 1,836 |
| | 7 Mos. | 3 | 2 | 2727 | 163 | 29 | 1611 | 35 | 2851 | 11 | 492 | 1747 | 90 | ..... | 184 | ..... | 625 | 2 | 81 | 857 | 46 | 11,556 |
| Kansas | July | ..... | ..... | 942 | 21 | 2 | 174 | 15 | 325 | ..... | 72 | 178 | 9 | ..... | 12 | ..... | 52 | ..... | 20 | 66 | 2 | 1,890 |
| | 7 Mos. | 7 | 1 | 3420 | 151 | 22 | 1163 | 89 | 2768 | 1 | 561 | 1372 | 22 | ..... | 142 | ..... | 637 | ..... | 99 | 279 | 40 | 10,774 |
| Kentucky | July | ..... | ..... | 346 | 16 | ..... | 242 | 6 | 321 | ..... | 41 | 162 | 7 | ..... | 15 | ..... | 60 | ..... | 14 | 190 | 10 | 1,430 |
| | 7 Mos. | 12 | ..... | 2247 | 83 | 17 | 1368 | 53 | 2151 | ..... | 522 | 1256 | 48 | ..... | 142 | ..... | 382 | ..... | 86 | 905 | 61 | 9,333 |
| Louisiana | July | 2 | ..... | 236 | 28 | 10 | 140 | 2 | 328 | 1 | 29 | 170 | 17 | ..... | 17 | ..... | 78 | ..... | 17 | 65 | 1 | 1,141 |
| | 7 Mos. | 12 | ..... | 1909 | 88 | 13 | 1065 | 26 | 1930 | 1 | 375 | 916 | 62 | ..... | 90 | ..... | 419 | ..... | 99 | 380 | 15 | 7,400 |
| Maine | July | 2 | 1 | 76 | ..... | 2 | 108 | 8 | 145 | ..... | 33 | 72 | 11 | 1 | 12 | 3 | 26 | 1 | 3 | 34 | 5 | 543 |
| | 7 Mos. | 21 | 18 | 976 | 13 | 13 | 687 | 40 | 1256 | 7 | 289 | 587 | 67 | 8 | 75 | 10 | 188 | 2 | 55 | 206 | 40 | 4,558 |
| Maryland | July | 19 | 6 | 169 | 12 | 8 | 187 | 17 | 217 | ..... | 35 | 117 | 16 | ..... | 20 | ..... | 67 | 1 | 13 | 55 | 5 | 964 |
| | 7 Mos. | 56 | 64 | 1723 | 56 | 74 | 1199 | 78 | 1651 | ..... | 442 | 942 | 118 | ..... | 165 | ..... | 331 | 20 | 109 | 274 | 42 | 7,344 |
| Massachusetts | July | 77 | 53 | 560 | 38 | 68 | 418 | 13 | 636 | 1 | 165 | 363 | 62 | ..... | 42 | 31 | 138 | 15 | 70 | 10 | 23 | 2,783 |
| | 7 Mos. | 148 | 130 | 1576 | 106 | 150 | 1135 | 40 | 1808 | 2 | 490 | 935 | 200 | 1 | 135 | 59 | 309 | 19 | 195 | 237 | 48 | 7,723 |
| Michigan | July | 2 | 2 | 291 | 39 | 43 | 463 | 39 | 621 | ..... | 174 | 253 | 8 | ..... | 72 | ..... | 118 | 1 | 16 | 214 | 27 | 2,383 |
| | 7 Mos. | 61 | 23 | 4098 | 213 | 216 | 3591 | 303 | 5054 | 1 | 1224 | 1861 | 72 | ..... | 553 | 1 | 860 | 15 | 184 | 961 | 207 | 19,501 |
| Minnesota | July | 4 | ..... | 109 | 15 | 5 | 181 | 23 | 346 | 5 | 66 | 210 | 9 | 3 | 9 | ..... | 86 | 2 | 20 | 30 | 5 | 1,128 |
| | 7 Mos. | 34 | 2 | 2226 | 125 | 48 | 1551 | 86 | 2649 | 26 | 548 | 1542 | 80 | 7 | 92 | ..... | 532 | 12 | 179 | 311 | 53 | 10,103 |
| Mississippi | July | ..... | ..... | 222 | 3 | ..... | 124 | 1 | 331 | ..... | 42 | 101 | 8 | ..... | 13 | ..... | 35 | ..... | 3 | 95 | 1 | 979 |
| | 7 Mos. | 2 | ..... | 2510 | 49 | 2 | 1103 | 22 | 2344 | 1 | 479 | 834 | 26 | ..... | 82 | ..... | 319 | ..... | 57 | 570 | 15 | 8,415 |
| Missouri | July | 2 | 2 | 280 | 34 | 18 | 297 | 13 | 576 | ..... | 105 | 314 | 16 | ..... | 18 | ..... | 90 | ..... | 53 | 232 | 2 | 2,052 |
| | 7 Mos. | 19 | 8 | 4279 | 174 | 90 | 2213 | 80 | 4009 | 3 | 941 | 2099 | 69 | ..... | 171 | ..... | 684 | 3 | 201 | 838 | 71 | 15,952 |
| Montana | July | 1 | ..... | 101 | 6 | ..... | 108 | 6 | 129 | ..... | 21 | 92 | 1 | ..... | 10 | ..... | 38 | ..... | 6 | 121 | 3 | 643 |
| | 7 Mos. | 1 | ..... | 1087 | 47 | 3 | 660 | 15 | 979 | 2 | 237 | 578 | 3 | ..... | 46 | 1 | 273 | ..... | 31 | 579 | 32 | 4,574 |
| Nebraska | July | ..... | ..... | 437 | 27 | 1 | 125 | 10 | 250 | 3 | 34 | 150 | 19 | ..... | 10 | ..... | 58 | ..... | 24 | 103 | 1 | 1,252 |
| | 7 Mos. | 4 | ..... | 1634 | 145 | 7 | 902 | 40 | 1675 | 25 | 354 | 1052 | 83 | 3 | 91 | ..... | 385 | ..... | 143 | 532 | 20 | 7,095 |
| Nevada | July | 3 | ..... | 34 | 4 | ..... | 36 | 1 | 55 | 3 | 10 | 26 | 2 | 1 | ..... | 1 | 2 | ..... | 6 | 3 | 2 | 189 |
| | 7 Mos. | 8 | ..... | 176 | 15 | 2 | 142 | 2 | 193 | 7 | 59 | 124 | 2 | 1 | 12 | 2 | 49 | ..... | 8 | 41 | 12 | 855 |
| New Hampshire | July | 1 | ..... | 59 | 2 | 1 | 55 | 1 | 66 | ..... | 5 | 52 | 13 | ..... | 6 | ..... | 8 | ..... | 1 | 19 | ..... | 289 |
| | 7 Mos. | 21 | 6 | 489 | 23 | 11 | 402 | 14 | 538 | ..... | 126 | 293 | 82 | ..... | 66 | 14 | 113 | ..... | 42 | 152 | 18 | 2,410 |
| New Jersey | July | 27 | 34 | 203 | 22 | 34 | 183 | 21 | 249 | 1 | 129 | 206 | 43 | ..... | 21 | ..... | 59 | 2 | 38 | 81 | 14 | 6,367 |
| | 7 Mos. | 228 | 289 | 2492 | 155 | 179 | 1594 | 110 | 2390 | 12 | 905 | 1467 | 372 | ..... | 141 | 3 | 490 | 32 | 258 | 399 | 114 | 11,630 |
| New Mexico | July | ..... | ..... | 95 | 5 | ..... | 91 | 6 | 91 | ..... | 37 | 58 | 4 | ..... | 7 | ..... | 19 | ..... | 6 | 1 | 1 | 421 |
| | 7 Mos. | ..... | ..... | 830 | 43 | ..... | 422 | 20 | 561 | 5 | 220 | 308 | 25 | ..... | 28 | ..... | 137 | 1 | 30 | 115 | 11 | 2,756 |
| New York | July | 80 | 150 | 648 | 89 | 56 | 862 | 41 | 950 | 11 | 276 | 675 | 214 | 3 | 97 | 1 | 195 | 9 | 111 | 255 | 39 | 4,762 |
| | 7 Mos. | 619 | 966 | 6368 | 610 | 283 | 5617 | 330 | 6611 | 84 | 2215 | 4209 | 1244 | 43 | 663 | 48 | 1306 | 128 | 875 | 1293 | 381 | 33,393 |
| North Carolina | July | 2 | ..... | 379 | 9 | 2 | 305 | 17 | 547 | 1 | 53 | 186 | 34 | ..... | 29 | ..... | 89 | 1 | 32 | 161 | 9 | 1,858 |
| | 7 Mos. | 27 | 9 | 3822 | 76 | 22 | 1973 | 100 | 3381 | 10 | 474 | 1232 | 174 | ..... | 299 | ..... | 658 | 2 | 201 | 846 | 69 | 13,375 |
| North Dakota | July | ..... | ..... | 198 | 5 | 2 | 157 | 6 | 318 | 1 | 69 | 218 | 3 | ..... | 10 | ..... | 67 | ..... | 3 | 58 | 4 | 1,119 |
| | 7 Mos. | 2 | ..... | 561 | 16 | 2 | 360 | 6 | 686 | 4 | 133 | 451 | 11 | 1 | 27 | ..... | 160 | ..... | 9 | 176 | 8 | 2,613 |
| Ohio | July | 17 | 6 | 941 | 39 | 14 | 695 | 49 | 860 | 4 | 150 | 578 | 78 | ..... | 46 | ..... | 179 | 1 | 108 | 321 | 26 | 4,112 |
| | 7 Mos. | 195 | 51 | 5476 | 270 | 231 | 4435 | 262 | 5998 | 21 | 1684 | 3590 | 416 | 1 | 528 | 1 | 1163 | 12 | 720 | 1475 | 264 | 26,793 |
| Oklahoma | July | ..... | ..... | 312 | 2 | 3 | 247 | 9 | 372 | ..... | 50 | 200 | 9 | ..... | 17 | ..... | 63 | 1 | 23 | 91 | 1 | 1,400 |
| | 7 Mos. | 2 | ..... | 2495 | 43 | 21 | 1699 | 34 | 2576 | 5 | 524 | 1505 | 50 | ..... | 124 | ..... | 457 | 2 | 125 | 451 | 31 | 10,144 |
| Oregon | July | 3 | ..... | 127 | 19 | 4 | 185 | 12 | 207 | 12 | 51 | 119 | 13 | ..... | 13 | 1 | 51 | ..... | 13 | 90 | 11 | 931 |
| | 7 Mos. | 22 | ..... | 1660 | 166 | 28 | 1168 | 75 | 1442 | 18 | 522 | 856 | 52 | ..... | 89 | 9 | 481 | ..... | 106 | 525 | 83 | 7,302 |
| Pennsylvania | July | 47 | 89 | 637 | 70 | 9 | 722 | 31 | 853 | 7 | 176 | 683 | 89 | 20 | 56 | 10 | 220 | 1 | 103 | 228 | 25 | 4,076 |
| | 7 Mos. | 400 | 524 | 5718 | 421 | 103 | 5087 | 240 | 6306 | 35 | 1887 | 4405 | 590 | 52 | 573 | 67 | 1456 | 48 | 726 | 1205 | 210 | 30,053 |
| Rhode Island | July | 8 | 2 | 33 | 4 | 8 | 37 | 1 | 55 | ..... | 9 | 37 | 3 | ..... | ..... | ..... | 13 | ..... | 3 | 13 | 3 | 229 |
| | 7 Mos. | 63 | 6 | 463 | 25 | 56 | 268 | 9 | 426 | 2 | 134 | 197 | 35 | ..... | 19 | 5 | 87 | 2 | 34 | 64 | 18 | 1,913 |
| South Carolina | July | ..... | ..... | 242 | 5 | ..... | 136 | 2 | 244 | ..... | 37 | 60 | 7 | ..... | 19 | ..... | 38 | ..... | 13 | 64 | 3 | 868 |
| | 7 Mos. | 3 | ..... | 1740 | 34 | ..... | 1064 | 20 | 1774 | 2 | 311 | 530 | 55 | ..... | 146 | ..... | 279 | ..... | 88 | 407 | 45 | 6,498 |
| South Dakota | July | 1 | ..... | 23 | 13 | ..... | 83 | 7 | 94 | 1 | 24 | 61 | 1 | ..... | 8 | ..... | 26 | ..... | 3 | 75 | ..... | 420 |
| | 7 Mos. | 7 | ..... | 508 | 64 | ..... | 548 | 20 | 690 | 8 | 185 | 505 | 14 | ..... | 57 | ..... | 162 | ..... | 21 | 371 | 8 | 3,168 |
| Tennessee | July | ..... | ..... | 340 | 9 | ..... | 230 | 7 | 421 | ..... | 45 | 196 | 26 | ..... | 15 | ..... | 56 | ..... | 29 | 31 | 8 | 1,413 |
| | 7 Mos. | 11 | 16 | 4003 | 94 | 24 | 2193 | 133 | 3499 | 24 | 1125 | 1777 | 144 | ..... | 213 | 3 | 577 | 2 | 194 | 712 | 106 | 14,850 |
| Texas | July | ..... | 3 | 753 | 28 | ..... | 735 | 8 | 1121 | ..... | 212 | 489 | 28 | ..... | 37 | ..... | 178 | ..... | 51 | 392 | 11 | 4,046 |
| | 7 Mos. | ..... | 9 | 7457 | 195 | 104 | 4874 | 87 | 7704 | 4 | 1711 | 3750 | 213 | 1 | 386 | ..... | 1443 | 1 | 483 | 1658 | 130 | 30,210 |
| Utah | July | ..... | ..... | 55 | 6 | ..... | 49 | 4 | 100 | 1 | 23 | 32 | 5 | ..... | 3 | ..... | 18 | ..... | 5 | 25 | 3 | 329 |
| | 7 Mos. | ..... | ..... | 654 | 26 | 21 | 333 | 33 | 692 | 12 | 200 | 379 | 18 | 1 | 10 | 1 | 166 | ..... | 22 | 157 | 39 | 2,764 |
| Vermont | July | 1 | 2 | 68 | 4 | 2 | 42 | 3 | 69 | ..... | 22 | 38 | 11 | ..... | 7 | ..... | 17 | ..... | 2 | 4 | 4 | 296 |
| | 7 Mos. | 9 | 20 | 433 | 23 | 8 | 372 | 17 | 579 | 5 | 158 | 302 | 57 | 3 | 86 | 5 | 75 | 7 | 25 | 232 | 20 | 2,438 |
| Virginia | July | 5 | 3 | 366 | 15 | 8 | 327 | 13 | 656 | ..... | 85 | 240 | 7 | ..... | 21 | ..... | 78 | ..... | 24 | 149 | 17 | 2,014 |
| | 7 Mos. | 81 | 41 | 3258 | 105 | 60 | 1804 | 63 | 3743 | 9 | 645 | 1360 | 77 | ..... | 195 | 1 | 467 | ..... | 163 | 598 | 95 | 12,785 |
| Washington | July | 5 | ..... | 175 | 9 | 7 | 218 | 2 | 328 | ..... | 80 | 177 | 19 | ..... | 21 | 1 | 47 | ..... | 7 | 65 | 14 | 1,175 |
| | 7 Mos. | 19 | 1 | 1785 | 113 | 48 | 1228 | 16 | 2161 | 13 | 589 | 1025 | 74 | ..... | 136 | 11 | 538 | ..... | 45 | 400 | 110 | 8,312 |
| West Virginia | July | 2 | 1 | 113 | 8 | 2 | 107 | 7 | 175 | 17 | 16 | 66 | 10 | ..... | 5 | ..... | 40 | 5 | 3 | 97 | 2 | 676 |
| | 7 Mos. | 13 | 49 | 1180 | 55 | 25 | 977 | 60 | 1347 | 47 | 356 | 638 | 33 | ..... | 103 | ..... | 245 | 9 | 74 | 511 | 40 | 5,762 |
| Wisconsin | July | 5 | ..... | 323 | 31 | 19 | 255 | 18 | 394 | 7 | 101 | 313 | 12 | 2 | 42 | 7 | 78 | ..... | 40 | 84 | 9 | 1,740 |
| | 7 Mos. | 36 | ..... | 2949 | 184 | 107 | 1543 | 62 | 2496 | 90 | 703 | 1660 | 67 | 28 | 235 | 29 | 454 | 2 | 231 | 499 | 76 | 11,451 |
| Wyoming | July | 1 | ..... | 62 | 7 | ..... | 39 | 1 | 85 | ..... | 12 | 38 | ..... | ..... | ..... | ..... | 16 | ..... | 10 | 76 | 1 | 348 |
| | 7 Mos. | 1 | ..... | 431 | 32 | 3 | 248 | 6 | 502 | 2 | 76 | 264 | 11 | ..... | 12 | ..... | 97 | 2 | 38 | 299 | 10 | 2,034 |
| Totals | July—1947 | 386 | 381 | 13789 | 917 | 414 | 11608 | 546 | 17735 | 95 | 3479 | 9858 | 1034 | 30 | 980 | 76 | 3502 | 42 | 1148 | 5132 | 495 | 71,647 |
| | July—1946 | 459 | 334 | 18754 | 99 | 305 | 8686 | 401 | 5313 | 51 | 1773 | 7767 | 269 | ..... | 988 | 34 | 3147 | ..... | 583 | 4189 | 505 | 53,657 |
| Totals | 7 Mos.—1947 | 2802 | 2527 | 118603 | 5944 | 2768 | 76192 | 3298 | 120577 | 733 | 30979 | 64071 | 5832 | 150 | 8192 | 364 | 23980 | 331 | 7666 | 25789 | 3929 | 504,727 |
| | 7 Mos.—1946 | 2456 | 2092 | 65236 | 2810 | 2064 | 53961 | 2444 | 59611 | 323 | 7515 | 38548 | 3960 | ..... | 4646 | 310 | 10866 | ..... | 5170 | 19245 | 3368 | 284,725 |

* Data from R. L. Polk & Co.


# "With an equal load my Studebaker outpulls any truck its size!"

AN OHIO mine operator made that statement in a letter to Studebaker just a little while ago. He says he has successfully competed his Studebaker against other trucks time and again on a hill alongside his property.

A West Virginia firm writes they've had two Studebaker trucks in operation for 16 months without one cent of expense for mechanical upkeep.

All over the nation, owners of Studebaker trucks report the same satisfactory kind of experience.

The result is that so far this year, over 8 times as many new Studebaker trucks have gone into service as in 1941 for the same period.

Whether it's freight pick-up in the city as pictured above—or moving hefty loads along twisting mountain roads—it's all the same to a husky Studebaker truck. It does its job dependably and economically.

It's certainly worth waiting to get Studebaker's kind of performance and value in your next new truck. But be sure to let your nearby Studebaker dealer know now what your truck requirements are likely to be. This will help him to serve you better.

**Studebaker**

**Builder of trucks you can trust**

The Studebaker Corporation, South Bend 27, Indiana, U. S. A.

# CCJ QUIZ

**by ROBERT F. BAHL**

Test your truck knowledge on these ten CCJ quiz questions. Each one is worth 10 points in arriving at your score. Passing mark is 70, but you shouldn't be content with just that. Aim for 100. Answers are on page 113.

**1.**

Big trucks, little trucks, and in-between trucks . . . but you'll find that better than two out of five have a rated capacity of . . .

a. less than 1 ton.
b. 1½ tons.
c. 1¾ to 2¾ tons.
d. 3 tons or over.

**2.**

You'll find that more truck bodies fall into this category than any other—

a. Panel.
b. Pick-up.
c. Dump.
d. Stake or platform.

**3.**

Chances are about 2 to 1 that the tank truck that just went down the road was hauling . . .

a. milk.
b. gasoline.
c. oil.
d. chemicals.

**Purrs like a kitten, doesn't it?**

**4.**

Of the trucks that are on our highways today, what percentage would you estimate to be diesel powered?

a. less than 1%.
b. 5%.
c. 10%.
d. 20%.

**5.**

About 941,000 motor trucks were manufactured last year. How many of these were cab-over-engine design?

a. 1 out of 500.
b. 1 out of 60.
c. 1 out of 20.
d. 1 out of 10.

**6.**

The greatest single group of trucks would be those used in connection with . . .

a. common carrier and contract hauling.
b. governmental agencies.
c. retail trade.
d. farming.

## JOBSERVATIONS

**by Buster Rothman**

**You can't leave the footprints in the sands of time in your carpet slippers.**

★ ★ ★

**Burning the candle at both ends won't make you bright.**

★ ★ ★

**Shoot at the sun and you may hit a star.**

★ ★ ★

**The only thing that comes to him who waits—is whiskers.**

★ ★ ★

**Stay put! A tree often transplanted bears little fruit.**

★ ★ ★

**Brains, unlike cars, are worth more when they are used.**

★ ★ ★

**Whether on the road or in an argument, when you see red, stop!**

★ ★ ★

**Formula for success: Learn to make a better mouthtrap.**

★ ★ ★

**Cut a niche for yourself; but don't chisel it.**

★ ★ ★

**A wise old negro once said: A chip on the shoulder is "'bout de heavies'" load a body ever carries.**

**7.**

Here's the same question, but this time its trailers and semi-trailers instead of trucks. The greatest number of trailers would be used by . . .

a. manufacturing industries.
b. intercity common carriers.
c. construction industries.
d. governmental agencies.

**8.**

This isn't such a hot question, but try your luck anyway. Which industry uses the greatest number of refrigerated trucks?

a. agriculture.
b. fishing.
c. manufacturing.
d. wholesale and retail trade.

**9.**

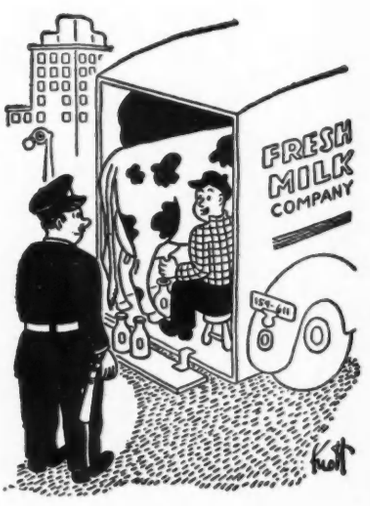
If you had to guess the make of truck that passed by last, you would be playing odds if you selected . . .

a. Ford.
b. Chevrolet.
c. International.
d. Mack.

**10.**

The average age of trucks on the highway today is . . .

a. 5 years.
b. 8 years.
c. 10 years.
d. 12 years.




**It's slower this way but it's fresh.**

# Truck Specifications Table

## OF CURRENT PRODUCTION MODELS

DATA SUPPLIED BY MANUFACTURERS AND TABULATED BY

## COMMERCIAL CAR JOURNAL

## Key to Definitions, References and Abbreviations

### DEFINITIONS

**MAKE AND MODEL**
Only Domestic Truck Models are listed.

**OPTIONAL UNITS**
For the express purpose of best fitting the truck to the individual job most of the models listed can be provided with optional engines, transmissions, axles, etc., and these models when so equipped are considered standard stock models.

**CHASSIS LIST PRICE**
The chassis list price applies to the minimum standard wheelbase with standard tires and standard equipment. All prices are F.O.B. factory. Chassis list price does not include the price of the Cab unless otherwise noted.

**RECOMMENDED GROSS VEHICLE WEIGHT FOR NORMAL SERVICE**
The Gross Weights published herewith are those supplied by manufacturers as their Recommended Gross Vehicle Weights for Normal Operating Conditions, and are based upon the Maximum Authorized Tire Size listed. In actual practice the manufacturer may either increase or decrease the gross vehicle weight rating when either favorable or unfavorable operating conditions are involved. Since the proper performance of a motor truck depends upon many factors, including grades, road conditions, etc., the gross weights that a manufacturer is prepared to recommend will vary with particular conditions, and the manufacturer's own standard of safety factors. Specific recommendations, therefore, should be obtained from the manufacturer's representative.

**CHASSIS WEIGHT**
The chassis weight listed includes the weight of the minimum standard wheelbase chassis, with cowl, with standard tires, with standard equipment, with crankcase and cooling system full, and 5 gallons of fuel in the tank. It does not include the weight of the Cab. This applies to C.O.E. as well as conventional chassis types. Exceptions are noted.

**STANDARD TIRE SIZE**
The standard tire size listed is that which is included in the Chassis List Price.

**MAXIMUM AUTHORIZED TIRE SIZE**
The tire size listed in this column is the maximum size recommended by the manufacturer of the chassis for the Gross Vehicle Weight for Normal Operating Conditions. It is furnished at extra cost, if it differs from the standard size. Dual rears are understood; exceptions noted.

**MINIMUM STANDARD WHEELBASE**
The minimum standard wheelbase is the so-called standard wheelbase on which the Chassis List Price is based.

**MAXIMUM STANDARD WHEELBASE**
The maximum standard wheelbase is the extreme end of the standard range of wheelbases offered by the chassis maker.

**MAXIMUM BRAKE HP.**
Maximum Brake Horsepower at Given R.P.M. is actual dynamometer reading without accessories.

**GEAR RATIO RANGE**
Gear Ratio Range in High—Ratios within the range given are available at no extra cost. Exceptions are noted.

**TRACTORS**
Unless given the designation (N)—meaning not available as a tractor—all standard models may be assumed to be available as tractors. Exclusively Tractor models are designated (T).

### KEY TO REFERENCES

**c.f.**—Cab Forward design.
**c.o.e.**—Cab-Over-Engine design.
(D)—Diesel-engine equipped.
(T)—Designed for tractor use only.
(C)—Converted Ford or Chevrolet Model.

(2) **International Harvester**—Specifications shown represent only the basic standard chassis units and standard chassis ratings in keeping with definitions established by Commercial Car Journal. Optional units not shown such as engines, clutches, transmissions, axles or axle ratios, brakes, wheels and tires, frames or frame reinforcements, optional wheelbases or any other units which make up part of the truck chassis and which International will furnish and approve from the factory as optional equipment can or will change either the ratings, chassis weight shown or performance of the truck as indicated by this list.

Also the company reserves the privileges of assigning special gross vehicle ratings for any chassis providing in the opinion of our engineering department, the type of service justifies the new rating without decreasing the safety factor designed into the truck.

(a)—Available with Eaton Two-Speed Axle designated KS Models.

## KEY TO ABBREVIATIONS

### MAKES—ALL

B—Bendix
BL—Brown-Lipe.
Bu or Bud—Buda.
BW—Bendix-Westinghouse
C—Chevrolet.
Cl or Cla—Clark.
Con—Continental.
Cum—Cummins-Diesel.
Eat—Eaton.
F—Ford.
Fu—Fuller
H—Hotchkiss.
Her—Hercules.
L—Lockheed.
LH—Lockheed front, Wagner "hi-Tock" rear.
LW—Lockheed front, Wisconsin rear.
M—Midland.
N.P.—New Process.
O or Ow—Own.
Op or Opt—Optional.
Shu—Shuler.
Spi—Spicer
T or Tim—Timken.
Tw—Timken-Westinghouse
TW—Timken-Wisconsin.
WG—Warner Gear.
Wau—Waukesha.
W or Wis—Wisconsin.
Ws—Westinghouse.
WW—Westinghouse or Wagner

### WHEELS DRIVEN

2F—Forward unit of Rear Axle Group.
2R—Rear Unit of Rear Axle Group
4R—Forward and rear units of Rear Axle Group.
6—All wheels.

### BRAKES—SERVICE

**Location**

4—Four Wheels, front and rear.
4r—Four Wheels, rear only.

**Type**

I—Internal.
X—External.

**Operation**

A—Air.
H—Hydraulic.
V—Vacuum.
D or Dp—Dual Primary

### BRAKES—HAND

**Location**

C—Center of double propeller shaft.
2—Rear wheels.
4—Four wheels.
6—Six wheels.
P—Back of Power Divider.
J—Jackshaft.
T—Transmission.
F—Driveshaft.

**Type**

D—Tru-Stop disk.
I—Internal.
M—Mechanical.
X—External.
PD—Two drums on rear of power divider.

### BRAKE DRUMS

**Material**

a—Cast alloy iron.
A—American Car Foundry.
c—Cast iron.
Cl—Copper iron.
Co—Composite.
D—Dayton.
E—Ermalite.
G—Gunite.
N—Nickel Iron.
S—Steel.

(Where a combination of any of the above is used, the first reference mark applies to the front and the second to the rear drums.)

### FRAME

**Type**

C—Channel.
T—Channel tapered front and rear.
L—Channel reinforced with liner.
B—Channel reinforced with both liner and fishplate.
P—Channel reinforced with plate.
TL—Channel tapered front and rear reinforced with liner.
D—Drop Center
Tf—Tapered front.
A—Straight section sidemembers, lined with oak inserts.
Z—Reinforced (X) member frame, box type sections.

### REAR AXLE

**Final Drive and Type**

B—Bevel.
CD—Chain Drive
F—Full-floating.
H or Hy—Hypoid.
d—Dual range axle.
2—Double Reduction.
S—Spiral bevel.
W—Worm.
¾—Three Quarters Floating.
½—Semi-Floating
T—Torque Tube

### GEAR RATIOS

(**) Only one ratio.

**Drive and Torque**

H—Hotchkiss (springs).
R—Radius Rods.
L—Parallel Torque Rods
T—Torque Arm.

### GOVERNOR STANDARD

Y—Yes.
N—No.

(Continued from Page 83)

| Line Number | MAKE AND MODEL | Chassis List Price | WHEELBASE Minimum Standard | WHEELBASE Maximum Standard | Gross Vehicle Weight for Normal Service | Chassis Weight (See definition) | TIRE SIZES D-dual rear S-single rear Standard Front and Rear | TIRE SIZES Maximum Authorized Tire Size (Duals unless noted) | ENGINE DETAILS Make and Model | No. of Cylinders, Bore and Stroke | Displacement | Comp. Ratio | Torque lb. ft. | Max. Brake H.P. at R.P.M. Given | Main Bearings Number, Diameter and Length | Governor Standard | TRANSMISSION Make and Model | Forward Sp'ds | REAR AXLE Make and Model | REAR AXLE Gear and Type | REAR AXLE Drive X Torque | REAR AXLE Gear Ratio Range in High | FRONT AXLE Make and Model | BRAKES SERVICE Make Location Type Operat'n | BRAKES SERVICE Lining Area | BRAKES SERVICE Drum Area | BRAKES SERVICE Drum Material | BRAKES Hand Location Type | C-A Dimensions (Min. Std. W. B.) | FRAME Side Rail Dimensions | FRAME Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Available | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | .....CS200-SP | ..... | 126 | 133 | 15000 | ..... | 7.00/20D | 7.50/20 | Wau 6BM | 6–3¹⁵⁄₁₆x4¼ | 263 | 5.9 | 180 | 78–2800 | 7–2¼x10¼ | N | WG T9 | 4 | Tim 53440H | SF | H | ** –6.67 | Tim 32502H | L4IH | ..... | ..... | a | TX | Opt | 10x3x¼ | T |
| 2 | .....C-250-SP | ..... | 105 | .... | 18000 | ..... | 7.50/20D | 8.25/20 | Wau 6BZ | 6–4x4¼ | 320 | 5.9 | 210 | 95–2500 | 7–2¼x10¼ | N | Fu 5A330 | 5 | Tim 54411H | SF | R | 6.83–7.4 | Tim 32502H | L4IH | 334 | 583 | a | TX | Opt | 10x3x¼ | T |
| 3 | .....CS-250-SP | ..... | 105 | .... | 20000 | ..... | 8.25/20D | 9.00/20 | Wau 6BZ | 6–4x4¼ | 320 | 5.9 | 210 | 95–2500 | 7–2¼x10¼ | N | Fu 5A330 | 5 | Tim 54411H | SF | R | 6.83–7.4 | Tim 32502H | L4IH | 334 | 583 | a | TX | Opt | 10x3x¼ | T |
| 4 | ....CS-400-LSP | ..... | 105 | .... | 21500 | ..... | 9.00/20D | 10.00/20 | Wau 6BZ | 6–4x4¼ | 320 | 5.9 | 210 | 95–2500 | 7–2¼x10¼ | N | Fu 5A330 | 5 | Tim 56410H | SF | R | 6.83–7.4 | Tim 35000H | L4IH | 334 | 583 | a | TX | Opt | 12x3x¼ | T |
| 5 | .....CS-500-SP | ..... | 105 | .... | 22000 | ..... | 9.00/20D | 10.00/20 | Wau 6MZA | 6–4¼x4¾ | 404 | 5.9 | 286 | 112–2500 | 7–2¾x12½ | Y | Fu 5F430 | 5 | Tim 56410H | SF | R | 6.83–7.4 | Tim 35000H | L4IH | 334 | 583 | a | TX | Opt | 12x3x¼ | T |
| 6 | .....CS-550-SP | ..... | 105 | .... | 24000 | ..... | 9.00/20D | 10.00/20 | Wau 6MZA | 6–4¼x4¾ | 404 | 5.9 | 286 | 112–2500 | 7–2¾x12½ | Y | Fu 5F430 | 5 | Tim 58300H | SF | R | 6.83–7.4 | Tim 35000H | L4IH | 380 | 660 | a | TX | Opt | 12x3x¼ | T |
| 7 | ....CS-550-SPX | ..... | 112 | .... | 32000 | ..... | 10.00/20D | 11.00/20 | Wau 6MZA | 6–4¼x4¾ | 404 | 5.9 | 286 | 112–2500 | 7–2¾x12½ | Y | Fu 5F430 | 5 | Tim S200H | 2F | R | ** –7.84 | Tim 26450H | L4IH | 570 | 1051 | a | TX | Opt | 14x3x☆ | T |
| 8 | .....CS-600 | ..... | Opt | Opt | 36000 | ..... | 11.00/20 | 11.00/24 | Wau 6SRKR | 6–4¾x5⅜ | 517 | 5.9 | 365 | 125–2300 | 7–2¾x12½ | Y | Fu 5F430 | 5 | Tim S200PA | 2F | R | ** –7.84 | Tim 27452TW | L4IH | 722 | 1051 | a | TX | Opt | 14x3x☆ | T |
| 9 | .....CS-600-SP | ..... | Opt | Opt | 40000 | ..... | 11.00/20 | 11.00/24 | Wau 145GK | 6–5¼x6 | 779 | 5.6 | 590 | 186–2000 | 7–3½x17¾ | Y | Spi 7841▽ | 8 | Tim S200PA | 2F | R | 6.42–7.84 | Tim 27452TW | L4IH | 722 | 1051 | a | TD | Opt | 14x3x☆ | T |
| 10 | (D)CS-600-SP.Opt. | ..... | Opt | Opt | 40000 | ..... | 11.00/20 | 11.00/24 | Cum HB600 | 6–4½x6 | 672 | 17. | 510 | 150–1800 | 7–4½x16½ | Y | Spi 7841▽ | 8 | T SW3012PA | WF | R | ** –6.16 | Tim 27452TW | L4IH | ..... | ..... | A | TD | Opt | 14x3x☆ | T |
| 11 | Biederman...NSH | ..... | 130 | 190 | 21000 | 6070 | 8.25/20D | 10.00/20 | Her JXLD | 6–4x4½ | 339 | 6.9 | 272 | 131–3200 | 7–2½x10 11/16 | N | Fu 5A330 | 5 | TimH700DPH | SF | H | ** –7.2 | Tim 35000HX | LH4IH | 514 | 744 | G | T | 60 | 9x3x¼ | C |
| 12 | .....NSD | ..... | 130 | 190 | 21000 | 6070 | 8.25/20D | 10.00/20 | Her JXLD | 6–4x4½ | 339 | 6.9 | 272 | 131–3200 | 7–2½x10 11/16 | N | Fu 5A330 | 5 | TimH700DPH | 2D | H | 6.13–8.15 | Tim 35000HX | LH4IH | 514 | 744 | G | T | 60 | 9x3x¼ | C |
| 13 | Chevrolet.....EP | 790 | 116 | .... | 4600 | ▽2550 | 6.00/16S | 15S | O-Thrift Mas. | 6–3½x3¾ | 216 | 6.5 | 174 | 90–3300 | 4– ♦ ♦ | N | Own | 3 | Own | Hy¼ | T | ** –4.11 | Own | O4IH | 159 | 242 | Co | 2I | 39 | 5¾x2¼x☆ | C |
| 14 | .....ER | 885 | 125 | .... | ♦5800 | 2830 | 15S | 7.00/17S | O-Thrift Mas. | 6–3½x3¾ | 216 | 6.5 | 174 | 90–3300 | 4– ♦ ♦ | N | Own | 3 | Own | HyF | H | ** –4.57 | Own | O4IH | 178 | 272 | Co | 2I | 48¼ | 5¾x2¼x☆ | C |
| 15 | .....ES | 930 | 137 | .... | 8800 | 3095 | 7.00/17S | 7.00/18 | O-Thrift Mas. | 6–3½x3¾ | 216 | 6.5 | 174 | 90–3300 | 4– ♦ ♦ | N | Own | 4 | Own | HyF | H | ** –5.14 | Own | O4IH | 243 | 371 | Co | 2I | 60 | 7x2¾x☆ | C |
| 16 | .....QJ | 1020 | 137 | .... | 12500 | 3475 | 7.00/20S | 7.50/20 | O-Thrift Mas.• | 6–3½x3¾ | 216 | 6.5 | 174 | 90–3300 | 4– ♦ ♦ | N | Own | 4 | □Own | HyF | H | 6.17 | Own | O4IH | 330 | 478 | Co | 2I | 60 | 7x2¾x☆ | C |
| 17 | .....QK | 1050 | 161 | .... | 12500 | 3585 | 7.00/20S | 7.50/20 | O-Thrift Mas.• | 6–3½x3¾ | 216 | 6.5 | 174 | 90–3300 | 4– ♦ ♦ | N | Own | 4 | □Own | HyF | H | 6.17 | Own | O4IH | 330 | 478 | Co | 2I | 84 | 8¼x2½x¼ | C |
| 18 | (School bus).QL | 1195 | 161 | .... | 12000 | 4075 | 6.50/20D | 7.00/20 | O-Thrift Mas.• | 6–3½x3¾ | 216 | 6.5 | 174 | 90–3300 | 4– ♦ ♦ | Y | Own | 4 | □Own | HyF | H | 6.17 | Own | O4IH | 330 | 478 | Co | 2I | ..... | 8¼x2½x¼ | C |
| 19 | .....QVS | 1410 | 137 | .... | 15000 | 4105 | 7.50/20D | 8.25/20▲ | O-Load Mas. | 6–3 7/16x3 11/16 | 235 | 6.6 | 192 | 93–3100 | 4– ♦ ♦ | Y | Own | 4 | □Own | HyF | H | 6.17 | Own | O4IH | 330 | 478 | Co | 2I | 60 | 8¼x2½x¼ | C |
| 20 | .....QWS | 1430 | 161 | .... | 15000 | 4185 | 7.50/20D | 8.25/20▲ | O-Load Mas. | 6–3 7/16x3 11/16 | 235 | 6.6 | 192 | 93–3100 | 4– ♦ ♦ | Y | Own | 4 | □Own | HyF | H | 6.17 | Own | O4IH | 330 | 478 | Co | 2I | 84 | 8¼x2½x¼ | C |
| 21 | (c.o.e.).....QPS | ●1715 | 110 | .... | 15000 | ●4590 | 7.50/20D | 8.25/20▲ | O-Load Mas. | 6–3 7/16x3 11/16 | 235 | 6.6 | 189 | 90–3100 | 4– ♦ ♦ | Y | Own | 4 | □Own | HyF | H | –6.17 | Own | O4IH | 330 | 478 | Co | 2I | 60⅛ | 8¼x2½x¼ | C |
| 22 | (c.o.e.).....QRS | ●1755 | 134 | .... | 15000 | ●4810 | 7.50/20D | 8.25/20▲ | O-Load Mas. | 6–3 7/16x3 11/16 | 235 | 6.6 | 189 | 90–3100 | 4– ♦ ♦ | Y | Own | 4 | □Own | HyF | H | –6.17 | Own | O4IH | 330 | 478 | Co | 2I | 84⅛ | 8¼x2½x¼ | C |
| 23 | (c.o.e.).....QSS | ●1775 | 158 | .... | 15000 | ●4895 | 7.50/20D | 8.25/20▲ | O-Load Mas. | 6–3 7/16x3 11/16 | 235 | 6.6 | 189 | 90–3100 | 4– ♦ ♦ | Y | Own | 4 | □Own | HyF | H | –6.17 | Own | O4IH | 330 | 478 | Co | 2I | 108⅛ | 8¼x2½x¼ | C |
| 24 | (c.o.e.).....QP | ●1715 | 110 | .... | 16000 | ●4590 | 7.50/20D | 8.25/20 | O-Load Mas. | 6–3 7/16x3 11/16 | 235 | 6.6 | 189 | 90–3100 | 4– ♦ ♦ | Y | Own | 4 | □Own | HyF | H | 6.17 | Own | O4IH | 330 | 478 | Co | 2I | 60⅛ | 8¼x2½x¼ | C |
| 25 | (c.o.e.).....QR | ●1755 | 134 | .... | 16000 | ●4810 | 7.50/20D | 8.25/20 | O-Load Mas. | 6–3 7/16x3 11/16 | 235 | 6.6 | 189 | 90–3100 | 4– ♦ ♦ | Y | Own | 4 | □Own | HyF | H | 6.17 | Own | O4IH | 330 | 478 | Co | 2I | 84⅛ | 8¼x2½x¼ | C |
| 26 | (c.o.e.).....QS | ●1775 | 158 | .... | 16000 | ●4895 | 7.50/20D | 8.25/20 | O-Load Mas. | 6–3 7/16x3 11/16 | 235 | 6.6 | 189 | 90–3100 | 4– ♦ ♦ | Y | Own | 4 | □Own | HyF | H | 6.17 | Own | O4IH | 330 | 478 | Co | 2I | 108⅛ | 8¼x2½x¼ | C |
| 27 | .....QV | 1410 | 137 | .... | 16000 | 4105 | 7.50/20D | 8.25/20 | O-Load Mas. | 6–3 7/16x3 11/16 | 235 | 6.6 | 192 | 93–3100 | 4– ♦ ♦ | Y | Own | 4 | □Own | HyF | H | 6.17 | Own | O4IH | 330 | 478 | Co | 2I | 60 | 8¼x2½x¼ | C |
| 28 | .....QW | 1430 | 161 | .... | 16000 | 4185 | 7.50/20D | 8.25/20 | O-Load Mas. | 6–3 7/16x3 11/16 | 235 | 6.6 | 192 | 93–3100 | 4– ♦ ♦ | Y | Own | 4 | □Own | HyF | H | 6.17 | Own | O4IH | 330 | 478 | Co | 2I | 84 | 8¼x2½x¼ | C |
| 29 | (School bus) .QX | 1475 | 199 | .... | 15000 | 4580 | 7.50/20D | 8.25/20 | O-Load Mas. | 6–3 7/16x3 11/16 | 235 | 6.6 | 192 | 93–3100 | 4– ♦ ♦ | Y | Own | 4 | □Own | HyF | H | 6.17 | Own | O4IH | 330 | 478 | Co | 2I | ..... | 8 11/16x2 11/16x☆ | C |
| 30 | Corbitt■.....18BG | ..... | 137 | Opt | 18000 | ..... | 9.00/20 | 10.00/20 | Con M6330 | 6–4x4¼ | 330 | 6.1 | 246 | 104–2800 | 7–2¼x12 | Y | Fu 5A33 | 5 | TimH100DPH | HyF | H | ** –5.29 | Tim 32502H | L4IHV | ..... | ..... | a | TX | Var | 8x3¼x¼ | T |
| 31 | .....22BG | ..... | 145 | Opt | 22000 | ..... | 10.00/20 | 10.00/22 | Con B6371 | 6–4 1/16x4 5/16 | 371 | 6.0 | 280 | 100–2600 | 7–2 7/16x13½ | Y | Fu 5A43 | 5 | Tim L100DPH | HyF | H | ** –5.29 | Tim 35000H | L4IHV | ..... | ..... | a | TX | Var | 8x3¼x¼ | T |
| 32 | .....25BG | ..... | 148 | Opt | 25000 | ..... | 10.00/22 | 11.00/22 | Con B6427 | 6–4 1/16x4 7/16 | 427 | 5.9 | 325 | 127–2600 | 7–2 7/16x13½ | Y | Fu 5A43 | 5 | Tim Q100P | HyF | H | ** –6.17 | Tim 35100TW | Ws4IA | ..... | ..... | a | TX | Var | 8¼x3¼x¼ | T |
| 33 | (T).....18TG | ..... | 137 | 137 | 18000 | ..... | 9.00/20 | 10.00/20 | Con M6330 | 6–4x4¾ | 330 | 6.1 | 246 | 104–2800 | 7–2¾x12 | Y | Fu 5A33 | 5 | Tim H100P | HyF | H | ** –5.29 | Tim 32502TW | Ws4IA | ..... | ..... | a | TX | 60½ | 7⅛x3¼x¼ | T |
| 34 | (T).....22TG | ..... | 145 | 145 | 22000 | ..... | 10.00/20 | 10.00/22 | Con B6427 | 6–4 1/16x4 7/16 | 427 | 5.9 | 325 | 127–2600 | 7–2 7/16x13½ | Y | Fu 5A43 | 5 | Tim L100P | HyF | H | ** –5.29 | Tim 35000 TW | Ws4IA | ..... | ..... | a | TX | 60½ | 8x3¼x¼ | T |
| 35 | (T).....25TG | ..... | 148 | 148 | 25000 | ..... | 10.00/22 | 11.00/22 | Con R6513 | 6–4½x5⅝ | 513 | 5.9 | 400 | 164–2600 | 7–3¼x14½ | Y | Fu 5A620 | 5 | Tim Q100P | HyF | H | ** –6.17 | Tim 35100TW | Ws4IA | ..... | ..... | a | 2 | 60½ | 8¼x3¼x¼ | T |
| 36 | (T).....28TG | ..... | 148 | 148 | 28000 | ..... | 10.00/22 | 11.00/24 | Con R6602 | 6–4½x5⅝ | 602 | 5.9 | 460 | 183–2600 | 7–3¼x14½ | Y | Fu 5A650 | 5 | Tim S200P | HyF | H | ** –6.42 | Tim 26450W | Ws4IA | ..... | ..... | a | 2 | 60½ | 8¼x3¼x¼ | T |
| 37 | (D) (T)...27TD | ..... | 152 | 152 | 27000 | ..... | 10.00/22 | 11.00/24 | Cum HB600 | 6–4½x6 | 672 | 17 | 500 | 150–1800 | 7–4½x16½ | Y | Fu 5A920 | 5 | Tim Q100P | HyF | H | ** –5.29 | Tim 26450W | Ws4IA | ..... | ..... | a | 2 | 60½ | 8¼x3¼x¼ | T |
| 38 | (D) (T)...28TD | ..... | 155 | 155 | 28000 | ..... | 10.00/22 | 11.00/24 | Cum NHB600 | 6–5½x6 | 743 | 15 | 575 | 200–2100 | ..... | Y | Fu 5A920 | 5 | Tim S200P | HyF | H | ** –6.42 | Tim 26450W | Ws4IA | ..... | ..... | a | 2 | 60½ | 8¼x3¼x¼ | T |
| | 2-speed models | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 39 | (T).....18TG | ..... | 137 | 137 | 18000 | ..... | 9.00/20 | 10.00/20 | Con M6330 | 6–4x4¾ | 330 | 6.1 | 246 | 104–2800 | 7–2¾x12 | Y | Fu 5A330 | 5 | Tim H300P | dF | H | 6.13–8.15 | Tim 32502TW | Ws4IA | ..... | ..... | a | TX | 60½ | 7⅛x3¼x¼ | T |
| 40 | (T).....22TG | ..... | 145 | 145 | 22000 | ..... | 10.00/20 | 10.00/22 | Con B6427 | 6–4 1/16x4 7/16 | 427 | 5.9 | 325 | 127–2600 | 7–2 7/16x13½ | Y | Fu 5A430 | 5 | Tim L300P | dF | H | 6.32–8.20 | Tim 35000TW | Ws4IA | ..... | ..... | a | TX | 60½ | 8x3¼x¼ | T |
| 41 | (T).....25TG | ..... | 148 | 148 | 25000 | ..... | 10.00/22 | 11.00/22 | Con R6513 | 6–4½x5⅝ | 513 | 5.9 | 400 | 164–2600 | 7–3¼x13½ | Y | Fu 5A620 | 5 | Tim Q300P | dF | H | 6.53–8.53 | Tim 35100TW | Ws4IA | ..... | ..... | a | 2 | 60½ | 8¼x3¼x¼ | T |
| 42 | (T).....28TG | ..... | 148 | 148 | 28000 | ..... | 10.00/22 | 11.00/24 | Con R6602 | 6–4½x5⅝ | 602 | 5.9 | 460 | 183–2600 | 7–3¼x13½ | Y | Fu 5A650 | 5 | Tim R300P | dF | H | 4.92–6.42 | Tim 26450W | Ws4IA | ..... | ..... | a | 2 | 60½ | 8¼x3¼x¼ | T |
| 43 | (D) (T)...22TD | ..... | 145 | 145 | 22000 | ..... | 10.00/20 | 10.00/22 | Her DWXD | 6–4¼x4¾ | 404 | 15 | 330 | 146–2600 | .. | Y | Fu 5A430 | 5 | Tim L300P | dF | H | 6.32–8.20 | Tim 35000TW | Ws4IA | ..... | ..... | a | TX | 60½ | 8x3¼x¼ | T |
| 44 | (D) (T)...25TD | ..... | 148 | 148 | 25000 | ..... | 10.00/22 | 11.00/22 | Her DRXC | 6–4⅝x5¼ | 529 | 14 | 380 | 147–2200 | 7–3½x13¾ | Y | Fu 5A620 | 5 | Tim Q300P | dF | H | 6.53–8.53 | Tim 35100TW | Ws4IA | ..... | ..... | a | 2 | 60½ | 8¼x3¼x¼ | T |
| 45 | (D) (T)...27TD | ..... | 152 | 152 | 27000 | ..... | 10.00/22 | 11.00/24 | Cum HB600 | 6–4½x6 | 672 | 17 | 500 | 150–1800 | 7–4½x16½ | Y | Fu 5A920 | 5 | Tim R300P | dF | H | 4.92–6.42 | Tim 26450W | Ws4IA | ..... | ..... | a | 2 | 60½ | 8¼x3¼x¼ | T |
| 46 | (D) (T)...28TD | ..... | 155 | 155 | 28000 | ..... | 10.00/22 | 11.00/24 | Cum NHB600 | 6–5½x6 | 743 | 15 | 575 | 200–2100 | ..... | Y | Fu 5A920 | 5 | Tim R300P | dF | H | 4.92–6.42 | Tim 26450W | Ws4IA | ..... | ..... | a | 2 | 60½ | 8¼x3¼x¼ | T |
| 47 | Crosley.....B | ..... | 80 | .... | 1680 | ..... | 4.50/12 | ..... | Own CE7 | 4–2½x2¼ | 44 | 7.5 | 33 | 26–5400 | 5–♦ | .. | WG-A8I-T92 | 3 | Spi | 2F | .. | ** –5.17 | Own | Haw M | 64 | 72 | C | .... | .... | ..... | ..... |
| 48 | Dodge.....WC | ..... | 116 | .... | 4600 | ..... | 6.00/16S | 6.50/16S | Own T-112 | 6–3¼x4⅜ | 217 | 6.6 | 172 | 95–3600 | 4–2½x4.8 | N | NP 36520 | 3 | Own T112 | HyS | H | 3.73–4.78 | Own T112 | O4IH | 174 | 264 | Co | TX | 40 11/16 | 6 1/16x2 1/16x☆ | C |
| 49 | .....WD-15 | ..... | 120 | .... | 5200 | ..... | TA-15S | TA-15S | Own T-114 | 6–3¼x4⅜ | 217 | 6.6 | 172 | 95–3600 | 4–2½x4.8 | N | NP 36520 | 3 | Own T114 | HyS | H | 3.73–4.78 | Own T114 | O4IH | 183 | 276 | Co | TX | 44 11/16 | 6 1/16x2 1/16x☆ | C |
| 50 | .....WD-20 | ..... | 120 | 133 | 7000 | ..... | 6.50/16S△ | 6.00/20 | Own T-116 | 6–3¼x4⅜ | 230 | 6.7 | 184 | 102–3600 | 4–2½x4.8 | N | NP 37520 | 3 | Own T116 | HyF | H | 3.90–4.89 | Own T116 | O4IH | 197 | 294 | Co | TX | 44 11/16 | 6 1/16x2 1/16x☆ | C |
| 51 | .....WF-21 | ..... | 135 | 160 | 9500 | ..... | 6.00/20S‡ | 6.50/20 | Own T-118 | 6–3 1/16x4¼ | 236 | 6.6 | 192 | 109–3600 | 4–2½x5.0 | N | NP 38750 | 4 | Own T118 | HyF | H | 5.11–6.83 | Own T118 | O4IH | 284 | 407 | C | TX | 60 | 7x2¾x.21 | C |
| 52 | .....WF-31 | ..... | 135 | 200 | 14000 | ..... | 6.00/20S‡ | 8.25/20‡ | Own T-118 | 6–3 1/16x4¼ | 236 | 6.6 | 192 | 109–3600 | 4–2½x5.0 | N | NP 38750 | 4 | Own T118 | HyF | H | 5.11–6.83 | Own T118 | O4IH | 284 | 407 | C | TX | 60 | 7x2¾x.21 | C |
| 53 | .....WFA-31 | ..... | 135 | 200 | 14000 | ..... | 6.00/20S‡ | 8.25/20‡ | Own T-118 | 6–3 1/16x4¼ | 236 | 6.6 | 192 | 109–3600 | 4–2½x5.0 | N | NP 38750 | 4 | Eat A5-1350 | SFd | H | Dual Rge. | Own T118 | O4IH | 284 | 407 | C | TX | 60 | 7x2¾x.21 | C |
| 54 | (c.o.e.) .WFM-35 | ..... | 105 | 159 | 14500 | ..... | 6.00/20S‡ | 8.25/20‡ | Own T-128 | 6–3 1/16x4¼ | 236 | 6.6 | 192 | 109–3600 | 4–2½x5.0 | N | NP 38780 | 4 | Own T128 | HyF | H | 5.11–6.83 | Own T128 | O4IH | 284 | 407 | C | TX | 60 | 7x2¾x☆ | C |
| 55 | (c.o.e.).WFMA-35 | ..... | 105 | 159 | 14500 | ..... | 6.00/20S‡ | 8.25/20‡ | Own T-128 | 6–3 1/16x4¼ | 236 | 6.6 | 192 | 109–3600 | 4–2½x5.0 | N | NP 38780 | 4 | Eat A5-1350 | SFd | H | Dual Rge. | Own T128 | O4IH | 284 | 407 | C | TX | 60 | 7x2¾x☆ | C |
| 56 | .....WFX-31 | ..... | 135 | 200 | 15000 | ..... | 7.50/20 | 8.25/20 | Own T-118 | 6–3 1/16x4¼ | 236 | 6.6 | 192 | 109–3600 | 4–2½x5.0 | Y | NP 38750 | 4 | Own T-118 | HyF | H | 5.62–6.83 | Own T-118 | O4IHV | 284 | 407 | C | TX | 60 | 7x2¾x.21 | C |
| 57 | .....WFAX-31 | ..... | 135 | 200 | 15000 | ..... | 7.50/20 | 8.25/20 | Own T-118 | 6–3 1/16x4¼ | 236 | 6.6 | 192 | 109–3600 | 4–2½x5.0 | Y | NP 38750 | 4 | Eat A5-1350 | SFd | H | 5.83–8.11 | Own T-118 | O4IHV | 284 | 407 | C | TX | 60 | 7x2¾x.21 | C |
| 58 | (c.o.e.) ..WFMX | ..... | 105 | 159 | 15500 | ..... | 7.50/20 | 8.25/20 | Own T-128 | 6–3 1/16x4¼ | 236 | 6.6 | 192 | 109–3600 | 4–2½x5.0 | Y | NP 38780 | 4 | Own T-128 | HyF | H | 5.62–6.83 | Own T-128 | O4IHV | 284 | 407 | C | TX | 60 | 7x2¾x☆ | C |
| 59 | (c.o.e.).WFMAX | ..... | 105 | 159 | 15500 | ..... | 7.50/20 | 8.25/20 | Own T-128 | 6–3 1/16x4¼ | 236 | 6.6 | 192 | 109–3600 | 4–2½x5.0 | Y | NP 38780 | 4 | Eat A5-1350 | SFd | H | 5.83–8.11 | Own T-128 | O4IHV | 284 | 407 | C | TX | 60 | 7x2¾x☆ | C |
| 60 | .....WG-40 | ..... | 136 | 220 | 15500 | ..... | 6.00/20D | 8.25/20 | Own T-120 | 6–3 1/16x4½ | 250 | 6.6 | 204 | 114–3600 | 4–2½x5.0 | Y | NP 39240 | 5 | Own T120 | HyF | H | 5.11–7.16 | Own T120 | O4IHV | 359 | 503 | C | TX | 60 11/16 | 8 1/16x2 11/16x☆ | C |
| 61 | .....WGA-40 | ..... | 136 | 220 | 15500 | ..... | 6.00/20D | 8.25/20 | Own T-120 | 6–3 1/16x4½ | 250 | 6.6 | 204 | 114–3600 | 4–2½x5.0 | Y | NP 39240 | 5 | Eat A5-1350 | SFd | H | Dual Rge. | Own T120 | O4IHV | 359 | 503 | C | TX | 60 11/16 | 8 1/16x2 11/16x☆ | C |
| 62 | .....WGAX-40 | ..... | 136 | 220 | 16000 | ..... | 9.00/20D° | 9.00/20° | Own T-120 | 6–3 1/16x4½ | 250 | 6.6 | 204 | 114–3600 | 4–2½x5.0 | Y | NP 39240 | 5 | Eat 16500 | SFd | H | Dual Rge. | Own T120 | O4IHV | 391 | 609 | C | TX | 60 11/16 | 8 1/16x2 11/16x☆ | C |
| 63 | (c.o.e.).WGM-40 | ..... | 105 | 159 | 16000 | ..... | 6.00/20D | 8.25/20 | Own T-130 | 6–3 1/16x4½ | 250 | 6.6 | 204 | 114–3600 | 4–2½x5.0 | Y | NP 39290 | 5 | Own T130 | HyF | H | 5.11–7.16 | Own T130 | O4IHV | 359 | 503 | C | TX | 60 | 8 1/16x2 11/16x☆ | C |
| 64 | (coe) .WGMA-40 | ..... | 105 | 159 | 16000 | ..... | 6.00/20D | 8.25/20 | Own T-130 | 6–3 1/16x4½ | 250 | 6.6 | 204 | 114–3600 | 4–2½x5.0 | Y | NP 39290 | 5 | Eat A5-1350 | SFd | H | Dual Rge. | Own T130 | O4IHV | 359 | 503 | C | TX | 60 | 8 1/16x2 11/16x☆ | C |
| 65 | (coe)WGMAX-40 | ..... | 105 | 159 | 16500 | ..... | 9.00/20D° | 9.00/20° | Own T-130 | 6–3 1/16x4½ | 250 | 6.6 | 204 | 114–3600 | 4–2½x5.0 | Y | NP 39290 | 5 | Eat 16500 | SFd | H | Dual Rge. | Own T130 | O4IHV | 391 | 609 | C | TX | 60 | 8 1/16x2 11/16x☆ | C |
| 66 | .....WH-45 | ..... | 136 | 220 | 15500 | ..... | 6.50/20D | 8.25/20 | Own T-120 | 6–3 1/16x4½ | 250 | 6.6 | 204 | 114–3600 | 4–2½x5.0 | Y | NP 39240 | 5 | Own T120 | HyF | H | 5.11–7.16 | Own T120 | O4IHV | 359 | 503 | C | TX | 60 11/16 | 8 1/16x2 11/16x☆ | C |
| 67 | .....WHA-45 | ..... | 136 | 220 | 15500 | ..... | 6.50/20D | 8.25/20 | Own T-120 | 6–3 1/16x4½ | 250 | 6.6 | 204 | 114–3600 | 4–2½x5.0 | Y | NP 39240 | 5 | Eat A5-1350 | SFd | H | Dual Rge. | Own T120 | O4IHV | 359 | 503 | C | TX | 60 11/16 | 8 1/16x2 11/16x☆ | C |
| 68 | .....WHAX-45 | ..... | 136 | 220 | 16000 | ..... | 9.00/20D° | 9.00/20° | Own T-120 | 6–3 1/16x4½ | 250 | 6.6 | 204 | 114–3600 | 4–2½x5.0 | Y | NP 39240 | 5 | Eat 16500 | SFd | H | Dual Rge. | Own T120 | O4IHV | 391 | 609 | C | TX | 60 11/16 | 8 1/16x2 11/16x☆ | C |
| 69 | (c.o.e.) .WHM-45 | ..... | 105 | 159 | 16000 | ..... | 6.50/20D | 8.25/20 | Own T-130 | 6–3 1/16x4½ | 250 | 6.6 | 204 | 114–3600 | 4–2½x5.0 | Y | NP 39290 | 5 | Own T130 | HyF | H | 5.11–7.16 | Own T130 | O4IHV | 359 | 503 | C | TX | 60 | 8 1/16x2 11/16x☆ | C |
| 70 | (coe) .WHMA-45 | ..... | 105 | 159 | 16000 | ..... | 6.50/20D | 8.25/20 | Own T-130 | 6–3 1/16x4½ | 250 | 6.6 | 204 | 114–3600 | 4–2½x5.0 | Y | NP 39290 | 5 | Eat A5-1350 | SFd | H | Dual Rge. | Own T130 | O4IHV | 359 | 503 | C | TX | 60 | 8 1/16x2 11/16x☆ | C |
| 71 | (coe)WHMAX-45 | ..... | 105 | 159 | 16500 | ..... | 9.20/20D° | 9.00/20° | Own T-130 | 6–3 1/16x4½ | 250 | 6.6 | 204 | 114–3600 | 4–2½x5.0 | Y | NP 39290 | 5 | Eat 16500 | SFd | H | Dual Rge. | Own T130 | O4IHV | 391 | 609 | C | TX | 60 | 8 1/16x2 11/16x☆ | C |
| 72 | .....WJ-55 | ..... | 136 | 235 | 18500 | ..... | 7.50/20D | 9.00/20 | Own T-136 | 6–3¾x4¼ | 281 | 6.5 | 225 | 115–3200 | 7–3x11.2 | Y | NP 39460 | 5 | TimH100DPH | HyF | H | 6.80–7.20 | Tim T136 | T4IHV | 396 | 609 | C | TX | 60 11/16 | 8 1/16x2 1/16x☆ | C |
| 73 | .....WJA-55 | ..... | 136 | 235 | 18500 | ..... | 7.50/20D | 9.00/20 | Own T-136 | 6–3¾x4¼ | 281 | 6.5 | 225 | 115–3200 | 7–3x11.2 | Y | NP 39460 | 5 | TimH300DPH | HyF | H | Dual Rge. | Tim T136 | T4IHV | 396 | 609 | C | TX | 60 11/16 | 8 1/16x2 1/16x☆ | C |
| 74 | .....WK-65 | ..... | 136 | 196 | 21000 | ..... | 8.25/20D | 10.00/20 | Own T-135 | 6–3¾x5 | 331 | 6.5 | 270 | 128–3000 | 7–3x11.2 | Y | NP 39440 | 5 | Tim L100DPH | HyF | H | 6.83–7.40 | Ti 32500NX14 | T4IHV | 424 | 666 | C | TX | 60 11/16 | 8 1/16x2 1/16x☆ | F |

■—Rear only; front 8.25/20.
Models QVS-QWS-QP-QR-QS-QV-QW-QX. Rear 6.50/20S.
▲ 7.50/20 can be used on the front with no change in 15000 G.V.W.
△ From only: Rear 7.00/16S.
■ Sleeper cab models available in 25-27-28 Series with 25 inch longer wheelbase.
♦ ♦ Diameter: Front, 2.6870; Front Center, 2.7180; Rear Center, 2.7490; Rear, 2.7800; Total length, 5☆.
□ Chevrolet own rear axle (5.43:1) available at extra cost on Models QJ-QK-QL.
♦ 7.50/17 tire is optional for Rear, or Front & Rear, with no increase in G.V.W.
* Own Loadmaster engine available on models QJ-QK-QL at extra cost
‡—1 Front 1.305x1.520; 3 Center .865x1.520; 1 Rear 1.498x2.00.
• Includes cab.
Chevrolet own 2-speed rear axle (6.13-8.10:1) available at extra cost on
* With Spi 703A with 3 forward speeds.
‡ Front only; ‡—Rear only; front 7.50/20.
▽ Includes weight of spare tire which is not included for all other models.

(Turn to Page 86, Please)

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LOW FRICTION is vital to balanced performance in piston rings. Sealed Power Individually Engineered Ring Sets insure low friction, as well as oil control, blow-by control, and minimum wear—the BIG FOUR requirements for piston ring satisfaction. Each Sealed Power Set is selected from twenty-six (26) basic designs of piston rings. Whatever the make, model or cylinder wear condition, there's a Sealed Power Set specifically engineered to do the best possible job. Sealed Power has been refining these sets for seven years, has been producing rings for car, truck and engine builders 35 years. For balanced performance, re-power with Sealed Power motor parts. Sold by leading distributors. Sealed Power Corporation, Muskegon, Mich. and Stratford, Ont.

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(Turn to Page 86, Please)

(Continued from Page 84)

| Line Number | MAKE AND MODEL | Chassis List Price | WHEEL-BASE Minimum Standard | WHEEL-BASE Maximum Standard | Gross Vehicle Weight for Normal Service | Chassis Weight (See definition) | TIRE SIZES D-dual rear S-single rear Standard Front and Rear | TIRE SIZES Maximum Authorized Tire Size (Duals unless noted) | ENGINE DETAILS Make and Model | No. of Cylinders, Bore and Stroke | Displacement | Comp. Ratio | Torque lb. ft. | Max. Brake H.P. at R.P.M. Given | Main Bearings Number, Diameter and Length | Governor Standard | TRANSMISSION Make and Model | Forward Sp'ds | REAR AXLE Make and Model | REAR AXLE Gear and Drive & Torque | REAR AXLE Gear Ratio Range in High | FRONT AXLE Make and Model | BRAKES SERVICE Make Location Type Operat'n | BRAKES SERVICE Lining Area | BRAKES SERVICE Drum Area | BRAKES SERVICE Drum Material | BRAKES Hand Location Type | C-A Dimension (Min. Std. W. B.) | FRAME Side Rail Dimensions | FRAME Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Dodge Cont'd WKA-65 | | 136 | 196 | 21000 | | 8.25/20D | 10.00/20 | Own T-135 | 6–3¾x5 | 331 | 6.5 | 270 | 128–3000 | 7–3x11.2 | Y | NP 39440 | 5 | Tim L300DPH | HyF | H | Dual Rge | Tl 32500NX14 | T4IHV | 424 | 666 | C | TX | 60½ | 8x2¾x⅜ | P |
| 2 | WR-65 | | 136 | 196 | 23000 | | 11.00/20♦ | 11.00/20♦ | Own T-135 | 6–3¾x5 | 331 | 6.5 | 270 | 128–3000 | 7–3x11.2 | Y | NP 39440 | 5 | Tim 100DPH | HyF | H | 6.83–7.80 | Tim35020NX9 | T4IHV | 486 | 770 | C | TX | 60½ | 8x2¾x⅜ | C |
| 3 | WRA-65 | | 136 | 196 | 23000 | | 11.00/20♦ | 11.00/20♦ | Own T-135 | 6–3¾x5 | 331 | 6.5 | 270 | 128–3000 | 7–3x11.2 | Y | NP 39440 | 5 | Tim 300DPH | HyF | H | Dual Rge | Tim35020NX9 | T4IHV | 486 | 770 | C | TX | 60½ | 8x2¾x⅜ | C |
| | Dodge (School Bus) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | WF-32-S | | 160 | | 14500 | | 6.50/20D | 7.50/20 | Own T-118 | 6–3⅛x4¼ | 236 | 6.6 | 192 | 109–3600 | 4–2½x5.0 | N | NP 38750 | 4 | Own T118 | HyF | H | 6.28–6.83 | Own T118 | O4IH | 284 | 407 | C | TX | .... | 7x2¾x.21 | C |
| 5 | WF-34-S | | 178 | | 14500 | | 7.00/20D | 7.50/20 | Own T-118 | 6–3⅛x4¼ | 236 | 6.6 | 192 | 109–3600 | 4–2½x5.0 | N | NP 38750 | 4 | Own T118 | HyF | H | 6.28–6.83 | Own T118 | O4IHV | 284 | 407 | C | TX | .... | 7x2¾x¼ | C |
| 6 | WF-36-S | | 200 | | 14500 | | 7.50/20D | 7.50/20 | Own T-118 | 6–3⅛x4¼ | 236 | 6.6 | 192 | 109–3600 | 4–2½x5.0 | N | NP 38750 | 4 | Own T118 | HyF | H | 6.28–6.83 | Own T118 | O4IHV | 284 | 407 | C | TX | .... | 7x2¾x¼ | P |
| 7 | WH-49-S | | 220 | | 16000 | | 7.50/20D | 8.25/20 | Own T-120 | 6–3⅛x4½ | 250 | 6.6 | 205 | 114–3600 | 4–2½x5.0 | Y | NP 39240 | 5 | Own T120 | HyF | H | 6.28–7.16 | Own T120 | O4IHV | 359 | 503 | C | TX | .... | 8x2½x⅜ | P |
| 8 | WJ-59-S | | 235 | | 18500 | | 9.00/20D | 9.00/20 | Own T-136 | 6–3¾x4¼ | 282 | 6.5 | 225 | 115–3200 | 7–3x11.2 | Y | NP 39460 | 5 | TimH100DPH | HyF | H | 6.8–7.2 | Tim32525NX1 | T4IHV | 396 | 609 | C | TX | .... | 8x2½x⅜ | P |
| 9 | Duplex T | | 136 | 220 | 18000 | 6600 | 8.25/20 | 9.00/20 | Her JXD | 6–4x4¼ | 320 | 6.2 | 240 | 113–3000 | 7–2½x10‡‡ | Y | Fu 5B330 | 5 | Tim H100 | B | H | ** –6.83 | Tim 32502 | L4IHV | 420 | 654 | A | TX | 59 | 9½x3½x⅜ | C |
| 10 | R | | 136 | 220 | 25000 | 8820 | 9.00/20 | 10.00/20 | Her WXLC-3 | 6–4¼x4¼ | 404 | 5.8 | 312 | 139–2600 | 7–2½x13¼ | Y | Fu 5A43 | 5 | Tim Q300 | DF | R | 6.53–8.53 | Tim 35000 | L4IHV | 730 | 1016 | A | TX | 79¼ | 9½x3½x⅜ | C |
| 11 | JHA | | 148 | 220 | 28000 | 9800 | 10.00/20D | 11.00/20 | Her RXB | 6–4½x5½ | 501 | 5.4 | 360 | 121–2200 | 7–3x14 | Y | Fu 5A620 | 5 | Tim S200 | 2F | R | ** –9.83 | Tim 26450 | Ws4IA | 912 | 1311 | A | TX | 79 | 10¼x3½x⅜ | C |
| 12 | KHA | | 148 | 220 | 32000 | 10500 | 11.00/20 | 11.00/20 | Her RXC | 6–4¾x5½ | 529 | 5.4 | 395 | 132–2300 | 7–3x14¼ | Y | Fu 5A620 | 5 | Tim U-200 | 2F | R | ** –9.83 | Tim 26450 | Ws4IA | 912 | 1311 | A | TX | 79 | 10¼x3½x⅜ | C |
| 13 | L | | 148 | 220 | 36000 | 11100 | 11.00/20 | 11.00/20 | Her RXLD | 6–4¾x5¼ | 558 | 5.4 | 425 | 154–2400 | 7–3½x13¼ | Y | Fu 5C650 | 5 | Tim U-200 | 2F | R | ** –9.83 | Tim 26450 | Ws4IA | 912 | 1311 | A | TX | 79 | 10¼x3½x⅜ | C |
| 14 | Federal 16M | | 146 | 194 | 13500 | 4460 | 7.50/20D | 7.50/20 | Her JXEF | 6–3½x4¼ | 245 | 6.5 | 180 | 87–3000 | 7–2½x10‡‡ | N | WG T9 | 4 | T 53547DPH | BF | H | ** –5.66 | Tim 30000HX | L4IHV | 310 | 482 | a | TX | 67 | 8x2½x¾ | T |
| 15 | 18M | | 146 | 194 | 15000 | 4700 | 8.25/20D | 8.25/20 | Her JXBF | 6–3½x4¼ | 263 | 6.5 | 189 | 93–3000 | 7–2½x10‡‡ | N | WG T9 | 4 | Tim E100DPH | 8F | H | ** –6.20 | Tim 30003H | LT4IHV | 314 | 532 | a | TX | 67 | 8x2½x¾ | T |
| 16 | 18M2 | | 146 | 194 | 15000 | 4830 | 8.25/20D | 8.25/20 | Her JXBF | 6–3½x4¼ | 263 | 6.5 | 189 | 93–3000 | 7–2½x10‡‡ | N | WG T9 | 8 | Tim E300DPH | dF | H | 6.13–8.10 | Tim 30003H | LT4IHV | 314 | 532 | a | TX | 67 | 8x2½x¾ | T |
| 17 | 25M | | 146 | 194 | 17500 | 4950 | 8.25/20D | 9.00/20 | Her JXCF | 6–3¾x4¼ | 282 | 6.5 | 212 | 102–3000 | 7–2½x10⅜ | N | Cla 205VO | 5 | TimH100DPH | 8F | H | ** –6.80 | Tim 3100H | LT4IHV | 346 | 583 | a | TX | 67 | 8x2½x¾ | T |
| 18 | 25M2 | | 146 | 194 | 17500 | 5100 | 8.25/20D | 9.00/20 | Her JXCF | 6–3¾x4¼ | 282 | 6.5 | 212 | 102–3000 | 7–2½x10⅜ | N | Cla 205VO | 5 | TimH300DPH | dF | H | 6.13–8.15 | Tim 3100H | LT4IHV | 346 | 583 | a | TX | 67 | 8x2½x¾ | T |
| 19 | 29M | | 146 | 194 | 20000 | 5500 | 9.00/20D | 10.00/20 | Her JXDF | 6–4x4¼ | 320 | 6.5 | 246 | 112–2800 | 7–2½x10‡‡ | Y | Cla 205V | 5 | Tim L100DPH | 8F | H | ** –6.83 | Tim 32514H | LT4IHV | 390 | 654 | a | TX | 67 | 8x2½x¾ | T |
| 20 | 29M2 | | 146 | 194 | 20000 | 5690 | 9.00/20D | 10.00/20 | Her JXDF | 6–4x4¼ | 320 | 6.5 | 246 | 112–2800 | 7–2½x10‡‡ | Y | Cla 205V | 10 | Tim L300DPH | dF | H | 6.32–8.22 | Tim 32514H | LT4IHV | 390 | 654 | a | TX | 67 | 8x2½x¾ | T |
| 21 | 29MA | | 155 | 194 | 20000 | 5950 | 9.00/20D | 10.00/20 | Her JXDF | 6–4x4¼ | 320 | 6.5 | 246 | 112–2800 | 7–2½x10‡‡ | Y | Cla 205V† | 15 | Tim L100DPH | 8F | H | ** –6.83 | Tim 32514H | LT4IHV | 466 | 820 | a | TD | 76 | 8x2½x¾ | T |
| 22 | 29ML | | 146 | 194 | 20000 | 5535 | 9.00/20 | 10.00/20 | Herc JXLDF | 6–4x4½ | 339 | 6.5 | 264 | 119–2800 | 7–2½x10‡‡ | Y | Cla 205V | 5 | Tim L100DPH | 8F | H | ** –6.83 | Tim 32514H | LT4IHV | 390 | 654 | a | TX | 67 | 8x2½x¾ | ‡T |
| 23 | 29ML2 | | 146 | 194 | 20000 | 5725 | 9.00/20 | 10.00/20 | Herc JXLDF | 6–4x4½ | 339 | 6.5 | 264 | 119–2800 | 7–2½x10‡‡ | Y | Cla 205V | 10 | Tim L300DPH | dF | H | 6.32–8.22 | Tim 32514H | LT4IHV | 390 | 654 | a | TX | 67 | 8x2½x¾ | ‡T |
| 24 | 29MLA | | 155 | 194 | 20000 | 5985 | 9.00/20 | 10.00/20 | Herc JXLDF | 6–4x4½ | 339 | 6.5 | 264 | 119–2800 | 7–2½x10‡‡ | Y | Cla 205V | 15 | Tim L100DPH | 8F | H | ** –6.83 | Tim 32514H | LT4IHV | 466 | 820 | a | TD | 76 | 8x2½x¾ | ‡T |
| 25 | 45M | | 143 | 203 | 24000 | 8005 | 10.00/22D | 10.00/24 | Con B6427 | 6–4⅛x4⅞ | 427 | 6.4 | 332 | 133–2600 | 7–2¾x13½ | Y | Cla 270VO | 5 | Tim Q100P | SF | R | ** –6.83 | Tim 35011TW | TW4IA | 606 | 933 | a | TD | 60½ | 10x3½x⅜ | T |
| 26 | 45M2 | | 143 | 203 | 24000 | 8380 | 10.00/22D | 10.00/24 | Con B6427 | 6–4⅛x4⅞ | 427 | 6.4 | 332 | 133–2600 | 7–2¾x13½ | Y | Cla 270VO | 10 | Tim Q300P | dF | R | 6.53–8.53 | Tim 35011TW | TW4IA | 606 | 933 | a | TD | 60½ | 10x3½x⅜ | T |
| 27 | 55M2 | | 143 | 203 | 27000 | 8635 | 11.00/22D | 11.00/24 | Con B6427 | 6–4⅛x4⅞ | 427 | 6.4 | 332 | 133–2600 | 7–2¾x13½ | Y | Cla 270VO | 10 | Tim S300P | HyF | R | 6.53–8.53 | Tim 36021TW | Tw4IA | 722 | 1051 | a | TD | 60½ | 10½x3½x⅜ | T |
| 28 | 55MA | | 155 | 203 | 27000 | 8765 | 11.00/22D | 11.00/24 | Con B6427 | 6–4⅛x4⅞ | 427 | 6.4 | 332 | 133–2600 | 7–2¾x13½ | Y | Cla 270V† | 15 | Tim S-200P | 2F | R | ** –7.08 | Tim 36021TW | TW4IA | 722 | 1051 | a | TD | 72½ | 10½x3½x⅜ | T |
| 29 | 60MA | | 155 | 203 | 28000 | 9600 | 11.00/22D | 11.00/24 | Con 22R | 6–4½x5¼ | 501 | 5.4 | 384 | 148–2400 | 7–2¾x14½ | Y | Fu 5A65‖ | 15 | Tim S200P | 2F | R | ** –7.08 | Tim 36021TW | Tw4IA | 722 | 1051 | a | FX | 72½ | 10½x3½x⅜ | T |
| 30 | 60M2 | | 143 | 203 | 28000 | 9370 | 11.00/22D | 11.00/24 | Con 22R | 6–4½x5¼ | 501 | 5.4 | 384 | 148–2400 | 7–2¾x14½ | Y | Fu 5A650 | 10 | Tim S300P | HyF | R | 6.53–8.53 | Tim 36021TW | Tw4IA | 722 | 1051 | a | TX | 60½ | 10¼x3½x⅜ | T |
| 31 | 65M2 | | 141 | 201 | 30000 | 9995 | 11.00/22D | 11.00/24 | Con R6602 | 6–4⅞x5⅝ | 602 | 6.1 | 464 | 200–2600 | 7–3¼x14½ | Y | Fu 5A650 | 10 | Tim S300P | HyF | R | 6.53–8.53 | Tim 36000TW | Ws4IA | 722 | 1051 | a | TX | 60½ | 10½x3½x⅜ | T |
| 32 | 65MA | | 153 | 201 | 30000 | 10225 | 11.00/22D | 11.00/24 | Con R6602 | 6–4⅞x5⅜ | 602 | 6.1 | 464 | 200–2600 | 7–3¼x14½ | Y | Fu 5A65‖ | 15 | Tim S200P | HyF | R | ** –7.08 | Tim 36000TW | Ws4IA | 722 | 1051 | a | TX | 72½ | 10½x3½x⅜ | T |
| | Ford Light Duty | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 33 | Chs. Cowl..79C | 878 | 114 | 114 | 4700 | ‡2276 | 6.50/16S | 6.50/16S | Own 59C | 8–3⅛x3¾ | 239 | 6.7 | 180 | 100–3800 | 3–2½x4.96 | N | Own 21C | 3 | Own 21C | S¾ | H | ** –3.78 | Own 21C | O4IH | 162 | 264 | Co | 21 | 40.06 | 5.92x2½x.15 | T |
| 34 | Chs. Cowl..7GC | 848 | 114 | 114 | 4700 | ‡2276 | 6.50/16S | 6.50/16S | Own 5GC | 6–3.3x4.4 | 226 | 6.7 | 180 | 90–3300 | 4–2½x4.88 | N | Own 21C | 3 | Own 21C | S¾ | H | ** –3.78 | Own 21C | O4IH | 162 | 264 | Co | 21 | 40.06 | 5.92x2½x.15 | T |
| 35 | Chs. Cowl...79Y | 1062 | 122 | 122 | 6600 | ‡2776 | 7.50/17S▽ | 7.50/17S▽ | Own 59Y | 8–3⅛x3¾ | 239 | 6.7 | 180 | 100–3800 | 3–2½x4.96 | N | Own 51Y | 4 | Own 21Y | SF | H | ** –4.85 | Own 21Y | O4IH | 187 | 308 | Co | 21 | 48.06 | 6x2¼x.19 | T |
| 36 | Chs. Cowl..7GY | 1032 | 122 | 122 | 6600 | ‡2776 | 7.50/17S▽ | 7.50/17S▽ | Own 5GY | 6–3.3x4.4 | 226 | 6.7 | 180 | 90–3300 | 4–2½x4.88 | N | Own 51Y | 4 | Own 21Y | SF | H | ** –4.85 | Own 21Y | O4IH | 187 | 308 | Co | 21 | 48.06 | 6x2¼x.19 | T |
| | Heavy Duty Dump | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 37 | Chs. Cowl..79U | 1273 | 134 | 134 | 12500 | ‡3911 | 7.50/20D | 7.50/20 | Own 59T | 8–3⅛x3¾ | 239 | 6.7 | 180 | 100–3800 | 3–2½x4.96 | N | Own 41T | 4 | Own 01T | SF | H | ** –6.66 | Own 01T | O4IH | 303 | 506 | Co | TX | 60.06 | 7x2¾x.21 | LT |
| 38 | Chs. Cowl..7GU | 1243 | 134 | 134 | 12500 | ‡3911 | 7.50/20D | 7.50/20 | Own 5GT | 6–3.3x4.4 | 226 | 6.7 | 180 | 90–3300 | 4–2½x4.88 | N | Own 4GT | 4 | Own 01T | SF | H | ** –6.66 | Own 01T | O4IH | 303 | 506 | Co | TX | 60.06 | 7x2¾x.21 | LT |
| | Heavy Duty Truck | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 39 | Chs. Cowl..79T | 1261 | 134 | 134 | 12500 | ‡3906 | 7.50/20D | 7.50/20 | Own 59T | 8–3⅛x3¾ | 239 | 6.7 | 180 | 100–3800 | 3–2½x4.96 | N | Own 41T | 4 | Own 01T | SF | H | ** –6.66 | Own 01T | O4IH | 303 | 506 | Co | TX | 60.06 | 7x2¾x.21 | LT |
| 40 | Chs. Cowl..7GT | 1231 | 134 | 134 | 12500 | ‡3906 | 7.50/20D | 7.50/20 | Own 5GT | 6–3.3x4.4 | 226 | 6.7 | 180 | 90–3300 | 4–2½x4.88 | N | Own 4GT | 4 | Own 01T | SF | H | ** –6.66 | Own 01T | O4IH | 303 | 506 | Co | TX | 60.06 | 7x2¾x.21 | LT |
| 41 | Chs. Cowl..798T | 1291 | 158 | 158 | 12500 | ‡3986 | 7.50/20D | 7.50/20 | Own 59T | 8–3⅛x3¾ | 239 | 6.7 | 180 | 100–3800 | 3–2½x4.96 | N | Own 41T | 4 | Own 01T | SF | H | ** –6.66 | Own 01T | O4IH | 303 | 506 | Co | TX | 84.06 | 7x2¾x.21 | LT |
| 42 | Chs. Cowl.7G8T | 1261 | 158 | 158 | 12500 | ‡3986 | 7.50/20D | 7.50/20 | Own 5GT | 6–3.3x4.4 | 226 | 6.7 | 180 | 90–3300 | 4–2½x4.88 | N | Own 4GT | 4 | Own 01T | SF | H | ** –6.66 | Own 01T | O4IH | 303 | 506 | Co | TX | 84.06 | 7x2¾x.21 | LT |
| | Heavy Duty COE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 43 | Cab Chs..791W | 1555 | 101 | 101 | 13500 | ‡4333 | 7.50/20D | 7.50/20 | Own 59W | 8–3⅛x3¾ | 239 | 6.7 | 180 | 100–3800 | 3–2½x4.96 | N | Own 41T | 4 | Own 01T | SF | H | ** –6.66 | Own 01W | O4IH | 303 | 506 | Co | TX | 60.06 | 7x2¾x.21 | T |
| 44 | Cab Chs...79W | 1585 | 134 | 134 | 13500 | ‡4468 | 7.50/20D | 7.50/20 | Own 59W | 8–3⅛x3¾ | 239 | 6.7 | 180 | 100–3800 | 3–2½x4.96 | N | Own 41T | 4 | Own 01T | SF | H | ** –6.66 | Own 01W] | O4IH | 303 | 506 | Co | TX | 93.06 | 7x2¾x.21 | LT |
| 45 | Cab Chs..798W | 1615 | 158 | 158 | 13500 | ‡4543 | 7.50/20 | 7.50/20 | Own 59W | 8–3⅛x3¾ | 239 | 6.7 | 180 | 100–3800 | 3–2½x4.96 | N | Own 41T | 4 | Own 01T | SF | H | ** –6.66 | Own 01W | O4IH | 303 | 506 | Co | TX | 117.1 | 7x2¾x.21 | LT |
| | Heavy Duty Dump | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 46 | Chs. Cowl.79UH | 1603 | 134 | 134 | 14500 | ‡4076 | 8.25/20^D | 8.25/20^ | Own 59T | 8–3⅛x3¾ | 239 | 6.7 | 180 | 100–3800 | 3–2½x4.96 | N | Own 41T | 4 | Own 59T-M■ | SFD | H | 5.83–8.11 | Own 01T | O4IHV | 303 | 506 | Co | TX | 60.06 | 7x2¾x.21 | LT |
| 47 | Chs.Cowl.7GUH | 1573 | 134 | 134 | 14500 | ‡4076 | 8.25/20^D | 8.25/20^ | Own 5GT | 6–3.3x4.4 | 226 | 6.7 | 180 | 90–3300 | 4–2½x4.88 | N | Own 4GT | 4 | Own 59T-M■ | SFD | H | 5.83–8.11 | Own 01T | O4IHV | 303 | 506 | Co | TX | 60.06 | 7x2¾x.21 | LT |
| | Heavy Duty Truck | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 48 | Chs. Cowl.79TH | 1591 | 134 | 134 | 14500 | ‡4071 | 8.25/20^D | 8.25/20^ | Own 59T | 8–3⅛x3¾ | 239 | 6.7 | 180 | 100–3800 | 3–2½x4.96 | N | Own 41T | 4 | Own 59T-M■ | SFD | H | 5.83–8.11 | Own 01T | O4IHV | 303 | 506 | Co | TX | 60.06 | 7x2¾x.21 | LT |
| 49 | Chs.Cowl.7GTH | 1561 | 134 | 134 | 14500 | ‡4071 | 8.25/20^D | 8.25/20^ | Own 5GT | 6–3.3x4.4 | 226 | 6.7 | 180 | 90–3300 | 4–2½x4.88 | N | Own 4GT | 4 | Own 59T-M■ | SFD | H | 5.83–8.11 | Own 01T | O4IHV | 303 | 506 | Co | TX | 60.06 | 7x2¾x.21 | LT |
| 50 | Chs.Cowl.798TH | 1621 | 158 | 158 | 14500 | ‡4151 | 8.25/20^D | 8.25/20^ | Own 59T | 8–3⅛x3¾ | 239 | 6.7 | 180 | 100–3800 | 3–2½x4.96 | N | Own 41T | 4 | Own 59T-M■ | SFD | H | 5.83–8.11 | Own 01T | O4IHV | 303 | 506 | Co | TX | 84.06 | 7x2¾x.21 | LT |
| 51 | Chs.Cowl.7G8TH | 1591 | 158 | 158 | 14500 | ‡4151 | 8.25/20^D | 8.25/20^ | Own 5GT | 6–3.3x4.4 | 226 | 6.7 | 180 | 90–3300 | 4–2½x4.88 | N | Own 4GT | 4 | Own 59T-M■ | SFD | H | 5.83–8.11 | Own 01T | O4IHV | 303 | 506 | Co | TX | 84.06 | 7x2¾x.21 | LT |
| | Heavy Duty COE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 52 | Cab Chs.791WH | 1885 | 101 | 101♦ | 15000 | ‡4498 | 8.25/20^D | 8.25/20^ | Own 59W | 8–3⅛x3¾ | 239 | 6.7 | 180 | 100–3800 | 3–2½x4.96 | N | Own 41T | 4 | Own 59T-M■ | SFD | H | 5.83–8.11 | Own 01W | O4IHV | 303 | 506 | Co | TX | 60.06 | 7x2¾x.21 | T |
| 53 | Cab Chs. .79WH | 1915 | 134 | 134 | 15000 | ‡4633 | 8.25/20^D | 8.25/20^ | Own 59W | 8–3⅛x3¾ | 239 | 6.7 | 180 | 100–3800 | 3–2½x4.96 | N | Own 41T | 4 | Own 59T-M■ | SFD | H | 5.83–8.11 | Own 01W | O4IHV | 303 | 506 | Co | TX | 93.06 | 7x2¾x.21 | LT |
| 54 | Cab Chs.798WH | 1945 | 158 | 158 | 15000 | ‡4708 | 8.25/20^D | 8.25/20^ | Own 59W | 8–3⅛x3¾ | 239 | 6.7 | 180 | 100–3800 | 3–2½x4.96 | N | Own 41T | 4 | Own 59T-M■ | SFD | H | 5.83–8.11 | Own 01W | O4IHV | 303 | 506 | Co | TX | 117.1 | 7x2¾x.21 | LT |
| | School Bus | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 55 | Cowl Chs.,.798T | 1346 | 158 | 158 | 13500 | ‡3970 | 7.50/20D | 7.50/20 | Own 59T | 8–3⅛x3¾ | 239 | 6.7 | 180 | 100–3800 | 3–2½x4.96 | N | Own 41T | 4 | Own 01T | SF | H | ** –6.66 | Own 01T | O4IH | 303 | 506 | Co | TX | .... | 7x2¾x.21 | T |
| 56 | Cowl Chs..7G8T | 1316 | 158 | 158 | 13500 | ‡3970 | 7.50/20D | 7.50/20 | Own 5GT | 6–3.3x4.4 | 226 | 6.7 | 180 | 90–3300 | 4–2½x4.88 | N | Own 4GT | 4 | Own 01T | SF | H | ** –6.66 | Own 01T | O4IH | 303 | 506 | Co | TX | .... | 7x2¾x.21 | T |
| 57 | Cowl Chs.,.794T | 1454 | 194 | 194 | 14500 | ‡4140 | 7.50/20D | 7.50/20 | Own 59T | 8–3⅛x3¾ | 239 | 6.7 | 180 | 100–3800 | 3–2½x4.96 | N | Own 41T | 4 | Own 01T | SF | H | ** –6.66 | Own 01T | O4IH | 303 | 506 | Co | TX | .... | 7x2¾x.21 | LT |
| 58 | Cowl Chs..7G4T | 1424 | 194 | 194 | 14500 | ‡4140 | 7.50/20D | 7.50/20 | Own 5GT | 6–3.3x4.4 | 226 | 6.7 | 180 | 90–3300 | 4–2½x4.88 | N | Own 4GT | 4 | Own 01T | SF | H | ** –6.66 | Own 01T | O4IH | 303 | 506 | Co | TX | .... | 7x2¾x.21 | LT |
| 59 | Hudson (¼T. Pkp) | | 128 | 128 | 4810 | | 6.50/16-6 | 6.50/16-6 | Own 178 | 6–3x5 | 212 | 6.5 | 168 | 102–4000 | 3– ▲▲ | N | Own | 3 | Own | 8½ | H | ** –4.55 | Own | B4IH | 141 | 242 | C | 2I | 42½ | 7½x1⅜x⅛ | B |
| 60 | Intern'l (2)...KB-1 | 800 | 113 | 125 | 4400 | 2190 | 6.00/16-4 | 7.00/16 | Own GRD214 | 6–3⅛x4½ | 213 | 6.3 | 160 | 82–3400 | 4–2⅝x6‡‡ | N | Own HDS-B | 3 | Own R1050 | 8½ | H | 3.72–5.11 | Own F50 | L4IH | 164 | 316 | e | FX | 38 | 6x2¼x⅛ | C |
| 61 | KB-1M | 755 | 102 | 113 | 4600 | 2090 | 6.00/16-4 | 6.50/16-6 | Own GRD214 | 6–3⅛x4½ | 213 | 6.3 | 160 | 82–3400 | 4–2⅝x6‡‡ | N | O SA-HDS-B | 3 | Own R1050 | 8½ | H | 3.72–5.11 | Own F150 | L4IH | 164 | 316 | e | FX | .... | 6½x2¼x⅛‡‡ | C |
| 62 | KB-2 | 840 | 125 | 125 | 5200 | 2225 | 6.00/16-4 | 7.00/16-6 | Own GRD214 | 6–3⅛x4½ | 213 | 6.3 | 160 | 82–3400 | 4–2⅝x6‡‡ | N | Own HDS-B | 3 | Own R1050 | 8½ | H | 3.72–5.11 | Own F50 | L4IH | 164 | 316 | e | FX | 50 | 6⅜x2¼x⅛ | C |
| 63 | KB-3 | 980 | 130 | .... | 6650 | 2970 | 7.00/16-6 | 7.50/16-6 | Own GRD214 | 6–3⅛x4½ | 213 | 6.3 | 160 | 82–3400 | 4–2⅝x6‡‡ | N | Own HDS-B | 3 | Own R1150 | SF | H | 4.22–5.28 | Own F150 | L4IH | 195 | 367 | e | FX | 55 | 6½x2⅜x⅛‡‡ | C |
| 64 | KB-3M | 905 | 102 | 113 | 7000 | 2525 | 7.00/16-6 | 7.50/16-8 | Own GRD214 | 6–3⅛x4½ | 213 | 6.3 | 160 | 82–3400 | 4–2⅝x6‡‡ | N | Own H41B | 4 | Own R1150 | SF | H | 4.22–5.28 | Own F150 | L4IH | 221 | 367 | e | TX | .... | 6½x2¼x⅛‡‡ | C |
| 65 | (a) KB-5 | 1130 | 135 | 177 | 13500 | 3630 | 6.50/20D | 8.25/20 | O-GRD 233 | 6–3⅛x4½ | 233 | 6.3 | 181 | 93–3400 | 4–2⅝x6‡‡ | N | Own H41B | 4 | Own R1360 | SF | H | 5.28–7.16 | Own F350 | LH4IH | 294 | 509 | e | TX | 60 | 8x3x⅜ | T |
| 66 | (a) KB-6 | 1575 | 134 | 176 | 14500 | 4530 | 7.00/20D | 8.25/20 | Own BLD250 | 6–3⅛x4½ | 251 | 6.3 | 200 | 100–3200 | 4–2⅝x5‡‡ | N | Own WT97A | 5 | Own R1450 | SF | H | 5.62–7.16 | Own F470 | LH4IHV | 305 | 539 | e | TX | 60 | 8¼x3x⅜ | T |

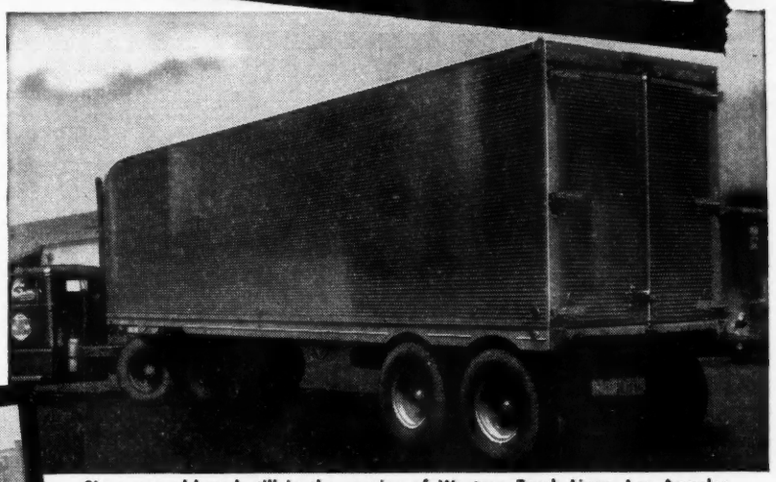
(Turn to Page 88, Please)

▽ Rear Only; Front 7.00/17. ^ Rear Only; Front 7.50/20. ‡ For shorter wheel bases 8½x2¼x⅜. ▲ On 146" and 155" wheel bases, thickness is ⅜". ♦ Dual Rear only; Front 10.00/20
● For shorter wheel bases—10x3½x¼. ▲▲ Diameter front 2.343, Center 2.375, Rear 2.406. Total length 5.750. † Auxiliary trans. Spicer 6281B, three forward speeds.
‖ Auxiliary trans. Spicer 703F, three forward speeds. ‡ Weight of complete vehicle with 5 gal. of gas. ■ Two speed rear axle with vacuum shift and power braking.

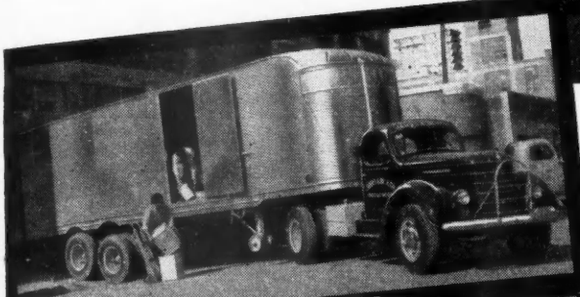
# WESTERN USERS ARE BUYING FRUEHAUF STAINLESS STEEL

## HERE'S WHY EXPERIENCED OPERATORS SAY "Buy Stainless Steel"

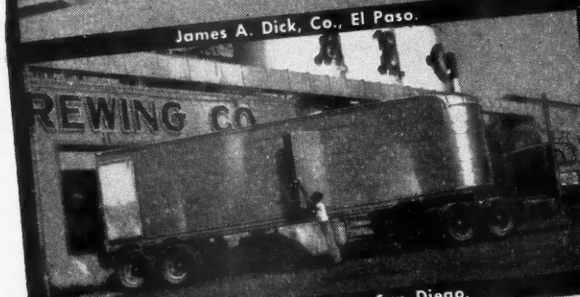
**NEW BEAUTY • NEW DURABILITY • NEW WEIGHT-SAVING STRENGTH • LARGER PAYLOADS • NO RUST OR CORROSION NO NEED FOR PAINTING • LONGER LIFE LOWER MAINTENANCE COST**



Six years old and still in the service of Western Truck Lines, Los Angeles.



James A. Dick, Co., El Paso.




LaSalle Trucking Co., San Diego.

Moser Transportation Co., L. A.

***Note these feature highlights!*** Examine records written on the roads—under all kinds of hauling conditions—by users of Stainless Steel Fruehaufs, as far back as 1940. You'll find maintenance figures so phenomenally low they are unmatched by any conventional type Vans. No Stainless Steel Trailer has ever been reported "worn out."

***But, go further*** — consider the increased payloads of these lighter-but-tougher Vans. Multiply the extra earning power by the long-life expectancy of these rust-free Trailers and you readily see why operators in the west are buying "Stainless Steel" in big quantities.

***Fruehauf Stainless Steel Vans*** are available in a wide choice of lengths—equipped with insulation and refrigeration, if desired. You also have your choice of single-axle Vans with "Multi-Rate" spring suspension or the revolutionary Gravity Suspension Tandems.

★ ★ ★

### TECHNICAL FACTS WORTH NOTING

| Metal | Yield Point | Tensile Strength |
|---|---|---|
| Stainless Steel (18-8) | 120,000 | 150,000 |
| High-Tensile Steel (NAX) | 55,000 | 75,000 |
| Aluminum Alloy (17 ST) | 32,000 | 55,000 |
| Ordinary Steel (SAE 1020) | 45,000 | 65,000 |

This chart shows clearly that Stainless Steel is more than twice as resilient as the high-tensile steel. The "yield point" engineers describe as the maximum point of resilience where the metal takes on a permanent distortion. "Tensile strength" is the breaking point.

*Note:* The "Shotweld" process used in Stainless Construction does not remove or weaken any portion of the metal.

*World's Largest Builders of Truck-Trailers*

**FRUEHAUF TRAILER COMPANY**
**DETROIT 32, MICHIGAN**

*69 Factory Service Branches*

A TRUCK IS LIKE A HORSE — IT CAN PULL MORE THAN IT CAN CARRY

**FRUEHAUF *Trailers***

*"Engineered Transportation"*

(Turn to Page 88, Please)

(Continued from Page 86)

| Line Number | MAKE AND MODEL | Chassis List Price | WHEEL-BASE Minimum Standard | WHEEL-BASE Maximum Standard | Gross Vehicle Weight for Normal Service | Chassis Weight (See definition) | TIRE SIZES D-dual rear S-single rear Standard Front and Rear | TIRE SIZES Maximum Authorized Tire Size (Duals unless noted) | ENGINE DETAILS Make and Model | No. of Cylinders, Bore and Stroke | Displacement | Comp. Ratio | Torque lb. ft. | Max. Brake H.P. at R.P.M. Given | Main Bearings Number, Diameter and Length | Governor Standard | TRANSMISSION Make and Model | Forward Sp'ds | REAR AXLE Make and Model | Gear and Type Drive & Torque | Gear Ratio Range in High | FRONT AXLE Make and Model | BRAKES SERVICE Make Location Type Operation | Lining Area | Drum Area | Drum Material | Hand Location Type | C-A Dimensions (Min. Std. W. B.) | FRAME Side Rail Dimensions | FRAME Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Internat'al Cont'd** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | (a).....KB-7 | 2000 | 134 | 176 | 16500 | 4960 | 7.50/20D | 9.00/20 | O-BLD 269 | 6-3¼x4½ | 269 | 6.3 | 222 | 100–3000 | 4–2.7x5½ | N | Own F51 | 5 | Own R1560 | SF H | 6.50–7.16 | Own F470 | LH4IHV | 368 | 633 | c | TX | 60 | 8¼x3x¼ | T |
| 2 | (a).....KB-8 | 3050 | 137 | 197 | 20000 | 6485 | 9.00/20D | 10.00/20 | O-RED 361 | 6-4½x4½ | 361 | 6.3 | 282 | 126–3000 | 7–3¼x10½ | Y | Own F51 | 5 | Own R1572 | SF H | 6.43–8.51 | Own F553 | LH4IHV | 407 | 700 | c | PX | 60 | 8½x3½x¼ | T |
| 3 | (a).....KB-10 | 3900 | 149 | 197 | 22500 | 7310 | 10.00/20D | 11.00/20 | Own RED401 | 6-4½x5 | 401 | 6.3 | 318 | 140–2800 | 7–3¼x10½ | Y | Own F52 | 5 | Own R1676 | SF H | 6.43–8.05 | Own F653 | LH4IHV | 484 | 829 | c | PX | 72 | 9½x3½x¼ | T |
| 4 | (a).....KBR-11 | 5400 | 149 | 197 | 27000 | 8335 | 10.00/20D | 12.00/20 | O-RED 450 | 6-4½x5 | 450 | 6.3 | 360 | 148–2600 | 7–3¼x10½ | Y | Own F54 | 5 | Tim S200P | 2SF H | 6.42–8 05 | Own F750 | WW4IA | 616 | 1030 | G | PX | 72 | 10x3½x¼ | T |
| 5 | .....KBR-12 | 6650 | 155 | 179 | 28500 | 9950 | 11.00/20 | 12.00/20 | O-Con. R6596 | 6–4½x5⅝ | 586 | 6.0 | 475 | 200–2600 | 7–3¼x13 | Y | Own F55 | 5 | Tim S200P | 2F H | ** –6.42 | Own F750 | BW4IA | 746 | .... | GS | FX | 66 | 10x3½x¼ | C |
| 6 | .....W-3042-H | 9900 | 179 | 227 | 30000 | 12140 | 10.00/20 | 11.00/22 | O-Con. S6749 | 6–5½x5½ | 749 | 6.0 | 554 | 254–2600 | 7–3¾x15¾ | Y | Spi 7741 | 4 | Tim S200P | 2F H | ** –6.42 | Own S6303 | BW4IA | 690 | .... | G | TX | 84 | 10x3½x¼ | C |
| 7 | .....W4064H | 12600 | 203 | 239 | 40000 | 15750 | 10.00/22 | 11.00/22 | Con S6749 | 6–5½x5½ | 749 | 6.0 | 554 | 254–2600 | 7–3¾x.... | Y | Spi 7741 | 4 | Tim SW3012 | WF L | 4.71–6.16 | Own S6303 | BW4IA | 876 | .... | .... | FX | 108 | 10x3½x¼ | C |
| 8 | .....W4564OH | 13200 | 206 | 242 | 45000 | 17160 | 10.00/22 | 11.00/22 | Con S6749 | 6–5½x5½ | 749 | 6.0 | 554 | 254–2600 | 7–3¾x.... | Y | Spi 7741 | 4 | Tim SW456 | WF H | 6.00–7.6 | Own S6303 | BW4IA | 1020 | .... | .... | FX | 108 | 10x3½x¼ | C |
| 9 | .....W6564OH | 15700 | 206 | 284 | 65000 | ..... | 11.00/24 | 12.00/24 | Con S6749 | 6–5½x5½ | 749 | 6.0 | 554 | 254–2600 | 7–3¾x.... | Y | Spi 7741 | 4 | Tim SD466 | 2F H | 8.15–11.66 | Own S6303 | BW4IA | .... | .... | .... | FX | 160 | 10x3½x¼ | C |
| 10 | Kenworth(D) . .521 | ..... | 161 | 215 | 35000 | 12200 | 10.00/20 | 11.00/22 | Cum HB6 | 6–4⅛x6 | 672 | 17 . 500 | | 150–1800 | 7–4½x16½ | Y | BL 7841 | 4 | Tim U200P | DR H | 6.42–7.84 | Tim 36000 TW | Ws4IA | 752 | 1050 | a | TD | 72 | 9⅛x3¼x¼ | C |
| 11 | .....587 | ..... | 150 | 215 | 30000 | 10130 | 10.00/20 | 11.00/22 | Bu LO525 | 6–4½x5½ | 525 | 5.5 | 385 | 150–2200 | 7–3x11½ | Y | Fu 5A620 | 5 | Tim U200P | ..... | ..... | Tim 35100 TW | Ws4IA | 752 | ..... | ..... | ..... | ..... | 9⅛x3¼x¼ | ..... |
| 12 | Mar. Her. . .DVL-1 | ..... | 90 | 118 | ‡6750 | ..... | 7.50/16S | 8.25/18S | Willys MB | 4–3½x4½ | 134 | 6.4 | 105 | 60–4000 | 3–2.33x5.48 | Y | Own | 3 | (Front Drive) | ..... | 7.10 | Own | 4IH | 202 | 327 | M2 | ..... | ..... | None | ..... |
| 13 | Reo.....C-19A | ..... | 125 | 125 | 14000 | 4810▲ | 7.50/20 | 8.25/20 | Own GC 245 | 6–3½x4½ | 245 | 6.2 | 191 | 89–3100 | 7–2½x10.7 | Y | WG T97 | 4 | T53547–E300 | SFd H | 5.66–6.16* | Tim 30000 | T4IVH▼ | 310 | 482 | var | TX | 60⅝ | 8½x2½x⅞ | T |
| 14 | .....C-19T | ..... | 125 | 125 | 14000 | 5280▲ | 8.25/20 | 8.25/20 | Own GC 245 | 6–3½x4½ | 245 | 6.2 | 191 | 89–3100 | 7–2½x10.7 | Y | WG T97 | 4 | Tim E300 | HFd H | 6.13&8.10 | Tim 30000 | T4IVH▼ | 310 | 482 | var | TX | 60⅝ | 8½x2½x⅞ | T |
| 15 | .....C-19B | ..... | 150 | 150 | 14000 | 4960▲ | 7.50/20 | 8.25/20 | Own GC 245 | 6–3½x4¼ | 245 | 6.2 | 191 | 89–3100 | 7–2½x10.7 | Y | WG T97 | 4 | T53547–E300 | SFd H | 5.66–6.16* | Tim 30000 | T4IVH▼ | 310 | 482 | var | TX | 85⅝ | 8½x2½x⅞ | T |
| 16 | .....C-19C | ..... | 165 | 165 | 14000 | 5030▲ | 7.50/20 | 8.25/20 | Own GC 245 | 6–3½x4¼ | 245 | 6.2 | 191 | 89–3100 | 7–2½x10.7 | Y | WG T97 | 4 | T53547–E300 | SFd H | 5.66–6.16* | Tim 30000 | T4IVH▼ | 310 | 482 | var | TX | 100⅝ | 8½x2½x⅞ | T |
| 17 | .....C-19L | ..... | 180 | 180 | 14000 | 5150▲ | 8.25/20 | 8.25/20 | Own GC 245 | 6–3½x4¼ | 245 | 6.2 | 191 | 89–3100 | 7–2½x10.7 | Y | WG T97 | 4 | T53547–E300 | SFd H | 5.66–6.16* | Tim 30000 | T4IVH▼ | 310 | 482 | var | TX | 115⅝ | 8½x2½x⅞ | TF |
| 18 | .....C-21T | ..... | 130 | 130 | 18000 | 6380▲ | 9.00/20 | 9.00/20 | Own GC 288 | 6–3½x5 | 288 | 6.2 | 225 | 96–3000 | 7–2½x10.7 | Y | Cla 205V–VO | 5 | Tim H300 | HFd H | 6.13&8.15 | Tim 31107 | T4IVH▼ | 344 | 584 | var | TX | 65⅝ | 9x3x¼ | T |
| 19 | .....C-21A | ..... | 130 | 130 | 18000 | 6090▲ | 9.00/20 | 9.00/20 | Own GC 288 | 6–3½x5 | 288 | 6.2 | 225 | 96–3000 | 7–2½x10.7 | Y | Cla 205V | 5 | Tim H300 | HFd H | 6.13&8.15 | Tim 31107 | T4IVH▼ | 344 | 584 | var | TX | 65⅝ | 9x3x¼ | T |
| 20 | .....C-21B | ..... | 150 | 150 | 18000 | 6080▲ | 8.25/20 | 9.00/20 | Own GC 288 | 6–3½x5 | 288 | 6.2 | 225 | 96–3000 | 7–2½x10.7 | Y | Cla 205V–VO | 5 | Tim H100–300 | HFd H | 6.16–6.8* | Tim 31107 | T4IVH▼ | 344 | 584 | var | TX | 85⅝ | 9x3x¼ | T |
| 21 | .....C-21C | ..... | 165 | 165 | 18000 | 6220▲ | 9.00/20 | 9.00/20 | Own GC 288 | 6–3½x5 | 288 | 6.2 | 225 | 96–3000 | 7–2½x10.7 | Y | Cla 205V–VO | 5 | Tim H100–300 | HFd H | 6.16–6.8* | Tim 31107 | T4IVH▼ | 344 | 584 | var | TX | 100⅝ | 9x3x¼ | TF |
| 22 | .....C-21L | ..... | 180 | 180 | 18000 | 6370▲ | 9.00/20 | 9.00/20 | Own GC 288 | 6–3½x5 | 288 | 6.2 | 225 | 96–3000 | 7–2½x10.7 | Y | Cla 205V | 5 | Tim H100–300 | HFd H | –6.8* | Tim 31107 | T4IVH▼ | 344 | 584 | var | TX | 115⅝ | 9x3x¼ | TF |
| 23 | .....C-22T | ..... | 130 | 130 | 20500 | 6630▲ | 9.00/20 | 9.00/20 | Own GC 310 | 6–3⅝x5 | 310 | 6.2 | 243 | 101–3000 | 7–2½x10.7 | Y | Cla 205V–VO | 5 | Tim H300 | HFd H | 6.13&8.15 | Tim 31107 | T4IVH▼ | 344 | 584 | var | TX | 65⅝ | 9½x3x¼x⅞ | T |
| 24 | .....C-22A | ..... | 130 | 130 | 20500 | 6220▲ | 9.00/20 | 9.00/20 | Own GC 310 | 6–3⅝x5 | 310 | 6.2 | 243 | 101–3000 | 7–2½x10.7 | Y | Cla 205V | 5 | Tim H300 | HFd H | 6.13&8.15 | Tim 31107 | T4IVH▼ | 344 | 584 | var | TX | 65⅝ | 9½x3x¼x⅞ | T |
| 25 | .....C-22B | ..... | 150 | 150 | 20500 | 6220▲ | 9.00/20 | 9.00/20 | Own GC 310 | 6–3⅝x5 | 310 | 6.2 | 243 | 101–3000 | 7–2½x10.7 | Y | Cla 205V–VO | 5 | Tim H Series | HFd H | 6.16–7.3* | Tim 31107 | T4IVH▼ | 344 | 584 | var | TX | 85⅝ | 9½x3x¼x⅞ | T |
| 26 | .....C-22C | ..... | 165 | 165 | 20500 | 6410▲ | 9.00/20 | 9.00/20 | Own GC 310 | 6–3⅝x5 | 310 | 6.2 | 243 | 101–3000 | 7–2½x10.7 | Y | Cla 205V–VO | 5 | Tim H100–300 | HFd H | 6.16–6.8* | Tim 31107 | T4IVH▼ | 344 | 584 | var | TX | 100⅝ | 9½x3x¼x⅞ | TF |
| 27 | .....C-22L | ..... | 185 | 185 | 20500 | 6490▲ | 9.00/20 | 9.00/20 | Own GC 310 | 6–3⅝x5 | 310 | 6.2 | 243 | 101–3000 | 7–2½x10.7 | Y | Cla 205V | 5 | Tim H100–300 | HFd H | 6.16* | Tim 31107 | T4IVH▼ | 344 | 584 | var | TX | 120⅝ | 9½x3x¼x⅞ | TF |
| 28 | .....23T | ..... | 130 | 130 | 23000 | 8180▲ | 10.00/20 | 10.00/20 | Con B6371 | 6–4½x4½ | 371 | 6.0 | 280 | 100–2650 | 7–2½x13.5 | Y | Cla 270VO | 5 | T58300–98415 | SFd H | – 7.8* | Tim 32500 | Ws4IA | 514 | 748 | var | TX | 69⅝ | 9½x3x¼x⅞ | TF |
| 29 | .....23B | ..... | 145 | 145 | 23000 | 7380▲ | 10.00/20 | 10.00/20 | Con B6371 | 6–4½x4½ | 371 | 6.0 | 280 | 100–2650 | 7–2½x13.5 | Y | Cla 270VO | 5 | T72300 | S2F H | – 8.4 | Tim 32500 | T4IVH▼ | 370 | 644 | var | TX | 84⅝ | 9½x3x¼x⅞ | TF |
| 30 | .....23L | ..... | 185 | 185 | 23000 | 7510▲ | 10.00/20 | 10.00/20 | Con B6371 | 6–4½x4½ | 371 | 6.0 | 280 | 100–2650 | 7–2½x13.5 | Y | Cla 270VO | 5 | T58300 | SF H | – 7.8 | Tim 32500 | T4IVH▼ | 370 | 644 | var | TX | 124⅝ | 9½x3x¼x⅞ | TF |
| 31 | .....25T | ..... | 130 | 130 | 27400 | 8660▲ | 10.00/20 | 10.00/20 | Con B6427 | 6–4⅞x4½ | 427 | 5.9 | 324 | 127–2700 | 7–2½x13.5 | Y | Cla 270V–VO | 5 | T98415 | SdF H | 6.53&8.53 | Tim 35000 | Ws4IA | 514 | 748 | var | TX | 69⅝ | 9½x3x¼x⅞ | TF |
| 32 | .....25BL | ..... | 145 | 145 | 27400 | 9310▲ | 10.00. 20 | 10.00/20 | Con B6427 | 6–4⅞x4½ | 427 | 5.9 | 324 | 127–2700 | 7–2½x13.5 | Y | Cla 270V&■ | 15 | TS200P | H2F H | –7.84 | Tim 35000 | Ws4IA | 660 | 952 | var | TD | 84⅝ | 9½x3x¼x⅞ | TFP |
| 33 | .....25BT | ..... | 145 | 145 | 27400 | 9360▲ | 10.00/20 | 10.00/20 | Con B6427 | 6–4⅞x4½ | 427 | 5.9 | 324 | 127–2700 | 7–2½x13.5 | Y | Cla 270VO&▽ | 15 | TS200P | H2F H | –7.84 | Tim 35000 | Ws4IA | 660 | 952 | var | TD | 84⅝ | 9½x3x¼x⅞ | TFP |
| 34 | .....25B | ..... | 145 | 145 | 27400 | 8570▲ | 10.00/20 | 10.00/20 | Con B6427 | 6–4⅞x4½ | 427 | 5.9 | 324 | 127–2700 | 7–2½x13.5 | Y | Cla 270VO | 5 | TS200P | H2F H | –7.84 | Tim 35000 | Ws4IA | 660 | 952 | var | TX | 84⅝ | 9½x3x¼x⅞ | TF |
| 35 | .....25L | ..... | 185 | 185 | 27400 | 8700▲ | 10.00/20 | 10.00/20 | Con B6427 | 6–4⅞x4½ | 427 | 5.9 | 324 | 127–2700 | 7–2½x13.5 | Y | Cla 270V | 5 | TS200P | H2F H | –7.84 | Tim 35000 | Ws4IA | 660 | 952 | var | TX | 124⅝ | 9½x3x¼x⅞ | TF |
| 36 | .....30A | ..... | 145△ | 145 | 32000 | 12000▲ | 11.00/20 | 11.00/24 | Con R6513 | 6–4½x5⅝ | 513 | 5.9 | 400 | 170–2600 | 7–3¼x14.5 | Y | Spl 6252–53♣ | 5 | TS300–U200 | HF2 H | 7.84* | Tim 36000 | Ws4IA | 722 | 1052 | var | TX | 66 | 10½x3½x3½ | T |
| 37 | .....30B | ..... | 165△ | 165 | 32000 | 12750▲ | 11.00/20 | 11.00/24 | Con R6513 | 6–4½x5⅝ | 513 | 5.9 | 400 | 170–2600 | 7–3¼x14.5 | Y | Spl 6252–53♣ | 5 | TS300–U200 | HF2 H | –7.84* | Tim 36000 | Ws4IA | 722 | 1052 | var | TX | 86 | 10½x3½x3½ | T |
| 38 | .....31A | ..... | 145△ | 145 | 32000 | 12000▲ | 11.00/20 | 11.00/24 | Con R6602 | 6–4½x5⅝ | 602 | 5.9 | 464 | 200–2600 | 7–3¼x14.5 | Y | Spl 6252–53♣ | 5 | TS300–U200 | HF2 H | –7.84* | Tim 36000 | Ws4IA | 722 | 1052 | var | TX | 66 | 10½x3½x3½ | T |
| 39 | .....31B | ..... | 165△ | 165 | 32000 | 12750▲ | 11.00/20 | 11.00/24 | Con R6602 | 6–4½x5⅝ | 602 | 5.9 | 464 | 200–2600 | 7–3¼x14.5 | Y | Spl 6252–53♣ | 5 | TS300–U200 | HF2 H | –7.84* | Tim 36000 | Ws4IA | 722 | 1052 | var | TX | 86 | 10½x3½x3½ | T |
| 40 | Sterling.....HD97 | ..... | 148 | 175 | 24000 | 9150 | 9.00/20 | 11.00/20 | Wau 6MZA | 6–4¼x4¼ | 404 | 5.6 | 290 | 130–3000 | 7–2½x12½ | Y | Fu 5A43 | 5 | Tim Q100DPH | FHy R | 5.29–7.80 | Tim 35011H | T4IHV | 466 | 822 | A | TX | 67 | 9x7x¼ | A |
| 41 | .....HD105 | ..... | 148 | 175 | 24000 | 9550 | 10.00/20 | 11.00/22 | Wau 6MZA | 6–4¼x4¾ | 404 | 5.6 | 290 | 130–3000 | 7–2½x12½ | Y | Fu 5A43 | 5 | Tim R100DPH | FHy R | 5.29–7.40 | Tim 35011H | T4IHV | 524 | 926 | A | TX | 67 | 9x3¼x¼ | A |
| 42 | .....HD115 | ..... | 148 | 175 | 32000 | 10650 | 10.00/20 | 11.00/24 | Wau 6SRKR | 6–4½x5½ | 517 | 5.5 | 368 | 125–2250 | 7–3x13⅞ | Y | Fu 5A62 | 5 | Tim S200P | 2F R | 7.77–8.53 | Tim 36000 TW | Ws4IA | 722 | 1054 | A | TX | 67 | 9x3¼x¼ | A |
| 43 | .....HD145 | ..... | 148 | 175 | 36000 | 11250 | 11.00/20 | 12.00/24 | Wau 6SRKR | 6–4½x5½ | 517 | 5.5 | 368 | 125–2250 | 7–3x13⅞ | Y | Fu 5A62 | 4 | Tim 70721W | 2F R | 7.69–11.36 | Tim 36000 TW | Ws4IA | 614 | 922 | A | TX | 67 | 9¼x3½x3½ | A |
| 44 | (D) . . .HD115H | ..... | 158 | 185 | 32000 | 11950 | 10.00/20 | 11.30/24 | Cum HB600 | 6–4⅛x6 | 672 | 17 . 500 | | 150–1800 | 7–4½x16½ | Y | Fu 4B86 | 4 | Tim S200P | 2F R | 7.77–8.53 | Tim 36000 TW | Ws4IA | 722 | 1054 | A | TX | 68 | 9x3¼x¼ | A |
| 45 | (D) . . .HD145H | ..... | 158 | 185 | 36000 | 12550 | 11.00/20 | 12.00/24 | Cum HB600 | 6–4⅛x6 | 672 | 17 . 500 | | 150–1800 | 7–4½x16½ | Y | Fu 4B86 | 4 | Tim 79721W | 2F R | 7.69–11.36 | Tim 36000 TW | Ws4IA | 614 | 922 | A | TX | 68 | 9¼x3½x3½ | A |
| 46 | .....HC97 | ..... | 148 | 175 | 24000 | 9200 | 9.00/20 | 11.00/20 | Wau 6MZA | 6–4¼x4¼ | 404 | 5.6 | 290 | 130–3000 | 7–2½x12½ | Y | Fu 5A43 | 5 | Own 97H | CS R | 6.70–10.82 | Tim 35011H | T4IHV | 540 | 842 | A | TX | 67 | 9x7x¼ | A |
| 47 | .....HC105 | ..... | 148 | 175 | 28000 | 9700 | 10.00/20 | 11.00/22 | Wau 6MZA | 6–4¼x4¾ | 404 | 5.6 | 290 | 130–3000 | 7–2½x12½ | Y | Fu 5A43‡ | 15 | Own 137H | CS R | 6.70–10.82 | Tim 35011H | TL4IHV | 540 | 842 | A | TX | 67 | 9x3¼x¼ | A |
| 48 | .....HC115 | ..... | 148 | 175 | 32000 | 10350 | 10.00/20 | 11.00/24 | Wau 8RKR | 6–4½x5½ | 517 | 5.5 | 368 | 125–2250 | 7–3x13⅞ | Y | Fu 5A62‡ | 15 | Own 137W | CS R | 6.70–10.82 | Tim 36000 TW | Ws4IA | 648 | 974 | A | TX | 67 | 9x3¼x¼ | A |
| 49 | .....HC144 | ..... | 148 | 175 | 36000 | 11250 | 10.00/22 | 12.00/24 | Wau 6SRKR | 6–4½x5½ | 517 | 5.5 | 368 | 125–2250 | 7–3x13⅞ | Y | Fu 5A62‡ | 15 | Own 148W | CS R | 6.70–10.82 | Tim 36000 TW | Ws4IA | 708 | 1042 | A | TX | 67 | 9¼x3½x3½ | A |
| 50 | .....HC147 | ..... | 148 | 175 | 36000 | 11500 | 10.00/22 | 12.00/24 | Wau 6SRKR | 6–4½x5½ | 517 | 5.5 | 368 | 125–2250 | 7–3x13⅞ | Y | Fu 5A62‡ | 15 | Own 147W | CS R | 6.70–10.82 | Tim 36000 TW | Ws4IA | 708 | 1042 | A | TX | 67 | 9¼x3½x3½ | A |
| 51 | .....HC175 | ..... | 167 | 185 | 45000 | 14600 | 12.00/24† | 14.00/24‡ | Wau 145GK | 6–5¼x6 | 779 | 6.2 | 585 | 186–2100 | 7–3½x17¾ | Y | Fu 4B86● | 12 | Own 175W | CS R | 7.31–12.42 | Tim 27454W | Ws4IA | 786 | 1152 | A | TX | 77 | 9¼x3½x3½ | A |
| 52 | .....HC250 | ..... | 178 | 190 | 60000 | 18400 | 14.00/24‡ | 14.00/24‡ | Wau 145GK | 6–5¼x6 | 779 | 6.2 | 585 | 186–2100 | 7–3½x17¾ | Y | Fu 4B86● | 12 | Own 251W | CS R | 7.31–12.42 | Tim 27454W | Ws4IA | 786 | 1157 | A | JX | 95 | 12x3½x3½ | AL |
| 53 | (D) . . .HC115H | ..... | 167 | 185 | 32000 | 12250 | 10.00/20 | 11.00/24 | Cum HB600 | 6–4⅛x6 | 672 | 17 . 500 | | 150–1800 | 7–4½x16½ | Y | Fu 4B86● | 12 | Own 137W | CS R | 6.70–10.82 | Tim 36000 TW | Ws4IA | 648 | 974 | A | TX | 77 | 9x3¼x¼ | A |
| 54 | (D) . . .HC175H | ..... | 167 | 185 | 45000 | 14930 | 12.00/24† | 14.00/24‡ | Cum HBD600 | 6–4⅛x6 | 672 | 17 . 500 | | 150–1800 | 7–4½x16½ | Y | Fu 4B86● | 12 | Own 175W | CS R | 7.31–12.42 | Tim 27454W | Ws4IA | 786 | 1152 | A | TX | 77 | 9¼x3½x3½ | A |
| 55 | (D) . . .HC250H | ..... | 178 | 190 | 60000 | 18700 | 14.00/24‡ | 14.00/24‡ | Cum HBD600 | 6–4⅛x6 | 672 | 17 . 500 | | 150–1800 | 7–4½x16½ | Y | Fu 4B86● | 12 | Own 251W | CS R | 7.31–12.42 | Tim 27454W | Ws4IA | 786 | 1152 | A | JX | 95 | 12x3½x3½ | AL |
| 56 | Studebaker. . . .M5 | ..... | 113 | 113 | 4500 | 2120 | 6.50/16S | 6.50/16S | Own 1M | 6–3x4 | 170 | 6.5 | 134 | 80–4000 | 4–2⅛x5⅛ | N | Own 664949 | 3 | Own 663597 | Hy H | ** –4.82 | Own 664307 | L4IH | 157 | 276 | Co | 2I | 45½ | 7⅛x2⅛x⅛ | T |
| 57 | .....M15A-20 | ..... | 120 | 120 | 7500 | 2960 | 7.00/17S | 7.50/17 | Own 2M | 6–3x4 | 170 | 6.5 | 134 | 80–4000 | 4–2⅛x5⅛ | N | Own 673674 | 4 | Own 664435 | SF H | 5.66–6.60 | Own 676461 | LH4IH | 216 | 342 | a | TX | 52½ | 7⅛x2½x⅛ | T |
| 58 | .....M15A-28 | ..... | 128 | 128 | 10000 | 3060 | 7.50/17S | 7.00/20 | Own 2M | 6–3x4 | 170 | 6.5 | 134 | 80–4000 | 4–2⅛x5⅛ | N | Own 673674 | 4 | Own 665174 | SF H | 6.60–5.66 | Own 676461 | LH4IH | 216 | 342 | a | TX | 60½ | 8⅛x2½x⅛ | T |
| 59 | .....M16 | ..... | 128 | 195 | 13500 | 3630 | 7.00/20D | 8.25/20 | Own 3M | 6–3⅛x4½ | 226 | 6.5 | 176 | 94–3600 | 4–2½x5½ | N | Own 674989 | 4 | Own 665171 | SF H | 5.66–6.66 | Own 664452 | LH4IH | 280 | 442 | Co | TX | 60½ | 8½x2½x⅞ | T |
| 60 | .....M16(2–Sp) | ..... | 128 | 195 | 15000 | 3955 | 7.00/20D | 8.25/20 | Own 3M | 6–3⅛x4½ | 226 | 6.5 | 176 | 94–3600 | 4–2½x5½ | Y | Own 674989 | 4 | Own 676055 | HyF H | 6.13–8.10 | Own 664452 | LH4IH | 280 | 442 | Co | TX | 60½ | 8½x2½x⅞ | T |
| 61 | Truckstell(C) F18-5 | ..... | 140 | 194 | 18500 | ▲5365 | 7.50/20* | 9.00/20 | Ford | 8–3⅛x3¾ | 239 | 6.4 | 180 | 100–3800 | 3–2½x4.71 | N | Ford & BL | 12 | Cla R1250 | SF H | 5.67–6.83 | Ford | L4IHV | 390 | 600 | a | TX | 65¾ | 7½x3x.47 | CTf |
| 62 | (C) . . . . .F19-5-0 | ..... | 108 | 166 | 19500 | ▲5615 | 7.50/20* | 9.00/20 | Ford | 8–3⅛x3¾ | 239 | 6.7 | 180 | 100–3800 | 3–2½x4.71 | N | Ford & BL | 12 | Cla R1250 | SF H | 5.67–6.83 | Ford | L4IHV | 390 | 600 | a | TX | 65¾ | 7½x3x.47 | CTf |
| 63 | (C) . . . . .C18-5 | ..... | 147 | 195 | 18500 | ▲5530 | 7.50/20* | 9.00/20 | Chevrolet | 6–3⅛x3⅜ | 235 | 6.6 | 192 | 93–3100 | 4–2¾x5⅛ | N | Chev & BL | 12 | Cla R1250 | SF H | 5.67–6.83 | Chevrolet | L4IHV | 399 | 600 | a | TX | 70 | 9½x3x.50 | CTf |
| 64 | (C) . . . . .C19-5-0 | ..... | 120 | 180 | 19500 | ▲5700 | 7.50/20* | 9.00/20 | Chevrolet | 6–3⅛x3⅜ | 235 | 6.6 | 192 | 93–3100 | 4–2¾x5⅛ | N | Chev & BL | 12 | Cla R1250 | SF H | 5.67–6.83 | Chevrolet | L4IHV | 399 | 600 | a | TX | 70 | 9½x3x.50 | CTf |
| 65 | Ward La Fr. .D-1A | 5340 | 149 | 220 | 25000 | 9500 | 10.00/20 | 11.00/20 | Con B6427 | 6–4⅛x4⅞ | 427 | 5.1 | 325 | 127–2600 | 7–2⅞x13½ | Y | Ful 5A430 | 5 | Tim 58415PA | B R | **–6.1 | Tim 35011TW | Ws4A | 600 | 928 | C | TM | 68¼ | 9⅛x3x¼ | ..... |
| 66 | .....D-1B | 6500 | 149 | 220 | 25000 | 9500 | 10.00/20 | 11.00/20 | Con 22R | 6–4½x5¼ | 501 | 5.4 | 384 | 148–2400 | 7–2¾x14½ | Y | Ful 5A620 | 5 | Tim Q-100 | B R | **–6.83 | Tim 35011TW | Ws4A | 600 | 928 | C | TM | 68¼ | 9½x3x¼ | ..... |
| 67 | .....D-1C | 6000 | 162 | 220 | 29000 | 9500 | 11.00/20 | 11.00/22 | Con B6427 | 6–4⅛x4⅞ | 427 | 5.1 | 325 | 127–2600 | 7–2⅞x13½ | Y | Ful 5A430 | 5 | Tim S-200P | S2 R | **–7.84 | Tim 35011TW | Ws4A | 673 | 1031 | C | TM | 68¼ | 9⅛x3x¼ | ..... |
| 68 | .....D-2K | 7400 | 149 | 220 | 29000 | 10000 | 11.00/20 | 11.00/22 | Wau 140GK | 6–4½x5½ | 525 | 6.4 | 425 | 168–2400 | 7–2¾x13⅜ | Y | Ful 5A620 | 5 | Tim S-200P | S2 R | **–7.84 | Tim 35011TW | Ws4A | 673 | 1031 | C | TM | 68¼ | 10x3½x⅞ | ..... |
| 69 | .....D-2Z | 7550 | 149 | 220 | 29000 | 10000 | 11.00/20 | 11.00/22 | Wau 140GZ | 6–4⅛x5½ | 554 | 6.4 | 456 | 184–2400 | 7–3¼x13⅞ | Y | Ful 5A650 | 5 | Tim S-200P | S2 R | **–7.84 | Tim 35011TW | Ws4A | 673 | 1031 | C | TM | 68¼ | 10x3½x⅞ | ..... |
| 70 | .....D-2B | 7285 | 162 | 220 | 29000 | 10000 | 11.00/20 | 11.00/22 | Con 22R | 6–4½x5¼ | 501 | 5.4 | 384 | 148–2400 | 7–2¾x14½ | Y | Ful 5A620 | 5 | Tim S-200P | B R | **–7.84 | Tim 35011TW | Ws4B | 673 | 1031 | C | TM | 68¼ | 10x3½x⅞ | ..... |
| 71 | .....D-3 | 7900 | 149 | 220 | 29000 | 10000 | 11.00/20 | 11.00/22 | Con R6572 | 6–4⅜x5⅜ | 572 | 5.9 | 440 | 189–2600 | 7–3¼x14½ | Y | Ful 5A650 | 5 | Tim S-200P | S2 R | **–7.84 | Tim 35011TW | Ws4B | 673 | 1031 | C | TM | 68¼ | 10x3½x⅞ | ..... |
| 72 | .....D-3S | 8050 | 149 | 220 | 29000 | 10000 | 11.00/20 | 11.00/22 | Con R6602 | 6–4⅜x5⅜ | 602 | 5.9 | 463 | 198–2600 | 7–3¼x14½ | Y | Ful 5A650 | 5 | Tim S-200P | S2 R | **–7.84 | Tim 35011TW | Ws4B | 673 | 1031 | C | TM | 68¼ | 10x3½x⅞ | ..... |
| 73 | .....D-5 | 10300 | 149 | 220 | 35000 | 12500 | 11.00/22 | 11.00/24 | Cum HB600 | 6–4⅛x6 | 672 | 17 | 500 | 150–1800 | 7–4½x16¾ | Y | Ful 5A650 | 5 | Tim U-200 | S2 R | **–6.42 | Tim 27454 | Ws4B | 681 | 1041 | C | TM | 68¼ | 10x3½x⅞ | ..... |

▲ Includes Cab. ‡ Rear only: Front 12.00/24. ♣ Auxiliary transmission, Own OJ. ♦ 2-Speed Axle Available. ■ 6031 Spicer Auxiliary Transmission.
† Rear only: Front 11.00/24. ▽ Front only: Rear 8.25/20. ♠ Auxiliary transmission Own FJ. ▼—Lockheed Type Front and Timken Dual Primary Rear Brakes.
△ 6231A Spicer Auxiliary Transmission. ♣ 8031 F-G Spicer Transmission. ● Special W.B.'s available on request. $ 8200 for 8.25/18 tires.

(Turn to Page 90, Please)

# USER REPORT

## .."a driver in our service has never had an accident due to brake failure."

Sunset MOTOR LINES
COVERING THE GREAT SOUTHWEST WITH DEPENDABLE DAILY SERVICE
GENERAL OFFICE
SAN ANGELO, TEXAS

June 24, 1947

Warner Electric Brake Mfg. Co.
Beloit, Wisconsin

Gentlemen:

In 1936 we purchased our first Warner Electric Brakes and have several trailers still operating daily with the original brakes. The only service required on these brakes has been to reline the bands.

We have 65 trailers in our operation all equipped with your electric brakes. These trailers operate over approximately 2000 miles of Texas highways, principally, between Houston and El Paso.

To my knowledge, a driver in our service has never had an accident due to brake failure. This is truly an enviable record.

We thought you would like to know about our experience with your electric brakes.

Yours very truly,
SUNSET MOTOR LINES
W. D. BRADLEY, PRESIDENT

WDB:je




**W. D. BRADLEY,** *Pres.*
SUNSET MOTOR LINES

The experience of Mr. Bradley and the Sunset Motor Lines, during 11 years of every-day use of Warner Electric Brakes on their tractor-trailer fleet, is typical of the kind of service you, too, can expect when your trailers are equipped with Warner Electric Brakes.

They provide an entirely new concept of effective stopping power. Being electrically operated there is no time lag in getting instantaneous action regardless of the distance between cab and rear trailer wheels. They develop their stopping power within the brake itself. Always *controlled* braking power — driver sets "Vari-load" dial on dash to meet load and road conditions.

For maximum performance and satisfaction, standardize on WARNER ELECTRIC BRAKES. Write for illustrated literature, explaining all their many advantages.

**WARNER ELECTRIC BRAKE MFG. CO.**
BELOIT, WISCONSIN

**..65 trailers WARNER EQUIPPED never in an accident due to Brake Failure**

WARNER
THE ORIGINAL AND PROVEN
ELECTRIC BRAKES
SINCE 1927

(Turn to Page 90, Please)

(Continued from Page 88)

| Line Number | MAKE AND MODEL | Chassis List Price | WHEEL-BASE Minimum Standard | WHEEL-BASE Maximum Standard | Gross Vehicle Weight for Normal Service | Chassis Weight (See definition) | TIRE SIZES D-dual rear S-single rear: Standard Front and Rear | TIRE SIZES: Maximum Authorized Tire Size (Duals unless noted) | ENGINE DETAILS: Make and Model | No. of Cylinders, Bore and Stroke | Displacement | Comp. Ratio | Torque lb. ft. | Max. Brake H.P. at R.P.M. Given | Main Bearings: Number, Diameter and Length | Governor Standard | TRANSMISSION: Make and Model | Forward Sp'ds | REAR AXLE: Make and Model | Gear and Type | Drive & Torque | Gear Ratio Range in High | FRONT AXLE: Make and Model | BRAKES SERVICE: Make Location Type Operat'n | Lining Area | Drum Area | Drum Material | Hand Location Type | C-A Dimension (Min. Std. W. B.) | FRAME: Side Rail Dimensions | FRAME: Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Willys (Sd.Del.)463 | 1285* | 104 | 104 | 4000 | *2752 | 6.50/15S | ..... | Own 463 | 4–3⅛x4¾ | 134 | 6.5 | 105 | 63–4000 | 3–2.33xo 48 | N | WG T96 | 3 | Spl 23–1 | Hy↓ | H | 4.88–5.38 | Own I Tr | B4IH | 133 | 220 | a | 2I | ..... | 5x2¼x.063 | TfD |
| 2 | Willys.....2WD | 1189▲ | 118 | 118 | 5300 | ▲2788 | 6.50/16S | 7.00/16S | Own 2WD | 4–3¼x4⅝ | 134 | 6.5 | 105 | 60–4000 | 3–2.33x5.48 | N | WG T90E | 3 | Tim51540NX2 | S↓ | H | 5.38–6.17 | Cla F-154 | B4IH | 176 | 276 | a | 2I | 42.28 | 5½x2x⅞ | TD |
| | **Four-Wheel-Drive** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | Corbitt .....22FG | ..... | 159 | Opt | 22000 | ..... | 9.00/20 | 10.00/20 | Con B6371 | 6–4½x4⅝ | 371 | 6.0 | 280 | 100–2600 | 7–2⅞x13½ | Y | Fu 5A43 | 5 | Tim R2090H | 2F | H | ** –8.43 | Tim F2090H | L4IHV | .... | 868 | a | TD | 74 | 9x3x¼ | DL |
| 4 | Dodge.....WDX | ..... | 126 | 126 | 8700 | ..... | 7.50/16S | 9.00/16S | Own T-137 | 6–3¼x4½ | 230 | 6.7 | 185 | 94–3200 | 4–2½x4.8 | Y | NP 38580 | 4 | Own T137 | HyF | H | 4.89–5.83 | Own T137 | O4IH | 210 | 311 | Co | TX | 52‡‡ | 6⅛x2⅞x⅞ | T |
| 5 | FWD.....HA | ..... | 132 | 156 | 17000 | ▲7470 | 8.25/20D | 10.00/20 | Wau BZ | 6–4x4¼ | 320 | 5.9 | 223 | 95–2800 | 7–2⅝x10¼ | Y | Own H | 5 | Own H | SF | H | 6.6 –9.06 | Own H | L4IHV | 391 | 807 | a | T4 | 79½ | 9x3x¼ | T |
| 6 | .....HR | ..... | 132 | 154 | 20000 | ▲8000 | 9.00/20 | 10.00/20 | Wau MZA | 6–4¼x4¾ | 404 | 5.6 | 291 | 129–2800 | 7–2⅝x12⅝ | Y | Own H | 5 | Own H | SF | H | 6.6 –9.06 | Own H | L4IHV | 391 | 807 | a | T4 | 79½ | 9x3x¼ | T |
| 7 | .....HG | ..... | 154 | 154 | 20000 | ▲8050 | 9.00/20 | 10.00/20 | Wau MZA | 6–4¼x4¾ | 404 | 5.6 | 291 | 129–2800 | 7–2⅝x12⅝ | Y | Own H | 5 | Own H | SF | H | 6.6 –9.06 | Own H | L4IHV | 391 | 807 | a | T4 | 89¾ | 7⅞x3x‡‡ | C |
| 8 | .....SU | ..... | 150 | 182 | 25000 | ▲10420 | 11.00/20D | 11.00/20 | Wau 8RKR | 6–4⅝x5⅛ | 517 | 5.5 | 365 | 126–2400 | 7–3x13⅞ | Y | Own U | 5 | Own U | BF | H | 6.7 –9.8 | Own U | L4IHV | 512 | 867 | a | T4 | 90 | 7⅞x3x‡‡ | C |
| 9 | .....SU‡ | ..... | 150 | 182 | 28000 | ▲10570 | 11.00/20D | 11.00/20 | Wau 8RKR | 6–4⅝x5⅛ | 517 | 5.5 | 365 | 126–2400 | 7–3x13⅞ | Y | Own U | 5 | Own U | BF | H | 6.7 –9.8 | Own U | L4IHV | 512 | 867 | a | T4 | 90 | 8⅞x3x‡‡ | C |
| 10 | .....M7 | ..... | 150 | 180 | 38600 | ▲15400 | 12.00/20D | 12.00/20 | Wau 145GK | 6–5¼x6 | 779 | 6.2 | 585 | 186–2000 | 7–3½x17¾ | Y | Own M | 10 | Tim 1758 | 2F | H | ** –7.33 | Wis F409 | Ws4IA | 578 | 976 | a | T4 | 90 | 10⅞x3x‡‡ | C |
| 11 | (D) .....M7D | ..... | 150 | 180 | 38600 | ▲15700 | 12.00/20D | 12.00/20 | Bu DC844 | 6–⅝x6½ | 844 | ... | 605 | 180–1800 | 7–3¾x17 | Y | Own M | 10 | Tim 1758 | 2F | H | ** –7.33 | Wis F409 | Ws4IA | 578 | 976 | a | T4 | 90 | 10⅞x3x‡‡ | C |
| 12 | (D) .....M10D | ..... | 150 | 180 | 44000 | ▲16400 | 11.00/24D | 12.00/24 | Bu DC844 | 6–5¼x6½ | 844 | ... | 605 | 180–1800 | 7–3¾x17 | Y | Own M | 10 | Tim 79721 | 2F | H | ** –7.7 | Wis F409 | Ws4IA | 614 | 1030 | a | T4 | 90 | 10⅞x3x‡‡ | C |
| 13 | Marmon-Herr.MH440-4 | ..... | 158 | 170 | 22500 | ▲8700 | 9.00/20D | 10.00/20 | Her WXLC3 | 6–4¼x4¼ | 404 | 5.4 | 293 | 118–2800 | 7–2⅝x13¼ | Y | Fu 5A430 | 5 | Tim R2090W | 2B | H | ** –8.43 | Tim F2090W | W....A | 584 | 887 | c | F | 72 | 9‡‡x3x¼ | T |
| 14 | .....MH555-4 | ..... | 161 | 173 | 28000 | ▲10200 | 10.00/20D | 11.00/20 | Her RXC | 6–4⅝x5¼ | 529 | 6.3 | 390 | 131–2200 | 7–3x13¼ | Y | Fu 5A620 | 5 | Tim R3100W | 2B | H | ** –8.15 | Tim F3100W | W....A | 692 | 1039 | c | F | 72 | 10⅞x3x⅞ | T |
| 15 | (C).....CM5-4 | ..... | 134 | 134 | 13500 | ▲4847 | 7.50/20D | 7.50/20 | Ford | 8–3⅞x3¾ | 239 | 6.4 | 180 | 100–3800 | 3–2½x4.71 | N | Ford | 4 | Ford | S | H | ** –6.67 | Own M5 | F.....H | 303 | 563 | a | F | 60⅞ | 7x2¾x⅞ | T |
| 16 | (C).....CM6-4 | ..... | 158 | 158 | 13500 | ▲4973 | 7.50/20D | 7.50/20 | Ford | 8–3⅞x3¾ | 239 | 6.4 | 180 | 100–3800 | 3–2½x4.71 | N | Ford | 4 | Ford | S | H | ** –6.67 | Own M5 | F.....H | 303 | 563 | a | F | 84⅞ | 7x2¾x⅞ | T |
| 17 | (C).....LD6P-4 | ..... | 114 | .... | .... | .... | 15* | | Ford | 8–3⅞x3¾ | 239 | 6.4 | 180 | 100–3800 | 3–2½x4.71 | N | Ford | 4 | Ford | S | T | ** –4.11 | Own O | F.....H | 162 | ... | A | F | ..... | ..... | X |
| 18 | (C).....LD6-4 | ..... | 114 | .... | 4700 | ▲2719 | 15* | | Ford | 8–3⅞x3¾ | 239 | 6.4 | 180 | 100–3800 | 3–2½x4.71 | N | Ford | 4 | Ford | S | H | ** –4.11 | Own O | F.....H | 162 | ... | A | F | 40⅞ | 5⅛x2⅛x⅞ | T |
| 19 | (C).....OT5-4 | ..... | 122 | .... | 6800 | ▲4500 | 7.50/17 | 7.50/17 | Ford | 8–3⅞x3¾ | 239 | 6.4 | 180 | 100–3800 | 3–2½x4.71 | N | Ford | 4 | Ford | S | H | ** –4.86 | Own I | F.....H | 180 | .... | A | F | 48 | 6x2¼x⅞ | T |
| 20 | Oshkosh....W-307 | ..... | 149 | 204 | 23600 | 10200 | 10.00/20 | 11.00/20 | Her WXLC3 | 6–4¼x4¾ | 404 | 6.3 | 310 | 118–2500 | 7–2⅝x13¾ | Y | Fu 5A43 | 5 | Tim 58300 | SF | H | ** –7.8 | Own W307 | L41I | 560 | 867 | G | TX | 82 | 8¼x3x⅝ | TF |
| 21 | .....W1700 | ..... | 150 | 205 | 28000 | 11000 | 11.00/20D | 12.00/20S | Her RXC | 6–4⅝x5¼ | 529 | 5.4 | 380 | 128–2200 | 7–3x13¼ | Y | Fu 5A620 | 5 | Own W1700 | 2F | H | ** –6.4 | Own 1700 | L4IH | 630 | 975 | G | TX | 82 | 8¼x3x⅝ | TF |
| 22 | .....W-700 | ..... | 150 | 204 | 30000 | ▲12000 | 11.00/20 | 12.00/20S | Her RXCO | 6–4⅝x5¼ | 529 | 5.4 | 380 | 128–2200 | 7–3x12¾ | Y | Fu 5A620 | 5 | Own W700 | 2F | H | ** –6.6 | Own W700 | L4IH | 630 | 975 | G | TX | 82 | 10⅛x3x⅜ | TF |
| 23 | .....W-703 | ..... | 150 | 204 | 30000 | ▲12200 | 11.00/20 | 12.00/20S | Her RXLD | 6–4¾x5¼ | 558 | 5.4 | 405 | 141–2200 | 7–3½x13¼ | Y | Fu 5A620 | 5 | Own W700 | 2F | H | ** –6.6 | Own W700 | L4IH | 630 | 975 | G | TX | 82 | 10⅛x3x⅜ | TF |
| 24 | (D) .....W-906 | ..... | 158 | 190 | 38000 | ▲14900 | 12.00/20 | 14.00/20S | Cum HB600 | 6–4⅞x6 | 672 | ... | 500 | 150–1800 | 7–4½x16 | Y | Fu 4A86 | 4 | Own W906 | 2F | H | ** –6.2 | Own W906 | LT4IWS | 645 | 975 | G | TX | 90 | 10⅛x3⅛x⅜ | TF |
| 25 | .....W2200 | ..... | 160 | 181 | 40000 | 16500 | 13.00/20D | 14.00/20S | Bu MO779 | 6–5¼x6 | 779 | ... | 575 | 188–2100 | 7–3¾x17 | Y | Fu 4A86 | 12 | Own W2200 | 2F | H | ** –6.14 | Own 2200 | LT4IA | 645 | 975 | G | TX | 90 | 10¼x3½x⅜ | TF |
| 26 | .....W2201 | ..... | 160 | 181 | 40000 | 16500 | 13.00/20D | 14.00/20S | Bu MO893 | 6–5⅝x6 | 893 | ... | 625 | 200–1800 | 7–3¾x17 | Y | Fu 4A86 | 12 | Own W2200 | 2F | H | ** –6.14 | Own 2200 | LT4IA | 645 | 975 | G | TX | 90 | 10¼x3½x⅜ | TF |
| 27 | (D).....W2204 | ..... | 160 | 181 | 46000 | 18500 | 13.00/20D | 14.00/24 | Bu 6DC844 | 6–5¼x6 | 844 | ... | 605 | 180–1800 | 7–3¾x17 | Y | Fu 4A86 | 12 | Own W2204 | 2F | H | ** –6.4 | Own 2204 | LT4IA | 740 | 1190 | G | TX | 90 | 10⅛x3½x⅜ | TF |
| 28 | Peterbilt(D)270DD | ..... | 165 | Opt | 27000 | 12500 | 10.00/20D | 11.00/22 | Cum HB600 | 6–4¼x6 | 672 | 17. | 500 | 150–1800 | 7–4½x16½ | Y | Spi 7741 | 12 | U-200P | 2F | R | ** –6.42 | Tim 36000W | Ws4IA | 800 | 1250 | a | FD | 80½ | 10⅝x3⅛x⅞ | TL |
| 29 | Sterling....DD115 | ..... | 160 | 178 | 32000 | 11500 | 10.00/20 | 11.00/24 | Wau 6SRKR | 6–4⅝x5⅛ | 517 | 5.5 | 368 | 125–2250 | 7–3x13⅞ | Y | Fu 5A62† | 10 | Tim 1357W | 2F | R | 6.65–8.6 | Tim F3110W | Ws4IA | 644 | 984 | A | TX | 76 | 9x3¼x¼ | A |
| 30 | (D).....DD145H | ..... | 167 | 185 | 36000 | 13900 | 11.00/20 | 12.00/24 | Cum HB600 | 6–4¼x6 | 672 | 17. | 500 | 150–1800 | 7–4½x16½ | Y | Fu 4B86‡ | 10 | Tim 1758W | 2F | R | 7.33–10.3 | Tim F409CW | Ws4IA | 644 | 984 | A | TX | 77 | 9¼x3⅝x3⅝ | A |
| 31 | Walter(c.f.)....FN | ..... | 126 | 150 | 20000 | 7500 | 9.00/20D | 10.00/20S | Wau MZA | 6–4¼x4¾ | 404 | 5.6 | 290 | 125–2600 | 7–2⅝x12½ | Y | Own FN | 6 | Own FNB | 2 | H | 6.0–8.0 | Own FN | O4IA | 470 | 670 | G | FI | 84 | 7x2¾x¼ | C |
| 32 | (c.f.)....FZM | ..... | 126 | 150 | 24000 | 8500 | 10.00/20D | 12.00/20S | Wau MZA | 6–4¼x4¾ | 404 | 5.6 | 290 | 125–2600 | 7–2⅝x12½ | Y | Own FN | 6 | Own FMB | 2 | H | 6.0–8.0 | Own FJ | O4IA | 470 | 670 | G | FI | 84 | 12x3½x1½ | B |
| 33 | (c.f.)....FCK | ..... | 126 | 138 | 30000 | 10500 | 10.00/24D | 11.00/24S | Wau 8RKR | 6–4⅝x5⅛ | 517 | 5.5 | 365 | 125–2200 | 7–3x13¾ | Y | Own FC | 6 | Own FCB | 2 | H | 7.5–9.0 | Own FC | O4IA | 585 | 890 | D | FI | 84 | 13x3¾x1½ | B |
| 34 | (c.f.)....FC | ..... | 138 | 162 | 32000 | 11000 | 11.00/24D | 12.00/24S | Wau 8RKR | 6–4⅝x5⅛ | 517 | 5.5 | 365 | 125–2200 | 7–3x13¾ | Y | Own FC | 6 | Own FCB | 2 | H | 7.5–9.0 | Own FCR | O4IA | 585 | 890 | D | FI | 96 | 14x3¾x1½ | B |
| 35 | (c.f.)....FGB | ..... | 126 | 162 | 32000 | 12000 | 11.00/24D | 12.00/24S | Wau 145GK | 6–5¼x6 | 779 | 5.7 | 580 | 185–2000 | 7–3½x17¾ | Y | Own FA | 6 | Own FCB | 2 | H | 7.5–9.0 | Own FCR | O4IA | 585 | 890 | D | FI | 84 | 14x3¾x1½ | B |
| 36 | (c.f.)....FGR | ..... | 126 | 162 | 42000 | 13000 | 12.00/24D | 12.00/24 | Wau 145GK | 6–5¼x6 | 779 | 5.7 | 580 | 185–2000 | 7–3½x17¾ | Y | Own FCR | 2 | Own FCR | 2 | H | 7.5–9.0 | Own FCR | O4IA | 585 | 890 | D | FI | 89 | 14x3¾x1½ | B |
| | Willys | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 37 | Unv. Jp...CJ-2A | *1146 | 80 | 80 | 3500 | *2169 | 6.00/16 | 7.00/15 | Own CJ-2A | 4–3⅛x4⅝ | 134 | 6.5 | 105 | 60–4000 | 3–2.33x5.48 | N | WG T90A | 6° | Spl 41-2 | Hy↓ | H | ** –5.38 | Spl 25 | B4IH | 118 | 198 | a | F | | 4x1⅝x⅞ | P |
| 38 | .....4WD | ▲1495 | 118 | 118 | 5300 | ▲2920 | 7.00/16 | ..... | Own 4WD | 4–3¼x4⅜ | 134 | 6.5 | 105 | 60–4000 | 3–2.33x5.48 | Y | WGT90A | 6° | Tm 51540NXZ | S½ | H | ** –5.38 | Spl 25 | B4IH | 176 | 276 | a | 2I | 42.28 | 5½x2x⅞ | TD |
| | **Six-Wheelers** Wheels Driven ▼ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 39 | Federal....663MA | ..... | 189 | 225 | 40000 | 14500 | 10.00/20 | 10.00/22 | Con R6602 | 6–4⅞x5⅜ | 602 | 6.1 | 464 | 200–2600 | 7–3¼x14½ | Y | Fu 5A65▼ | 15 | T SW3012P | WF | R | ** –6.16 | Tim 36000TW | Ws6IA | 1082 | 1569 | a | TD | 108 | 10½x3½x⅞ | T |
| 40 | .....664MAB | ..... | 189 | 225 | 55000 | 15850 | 11.00/22 | 12.00/20 | Con R6602 | 6–4⅞x5⅜ | 602 | 6.1 | 464 | 200–2600 | 7–3¼x14½ | Y | Spi 7741▼ | 12 | Tim SW456P | WF | R | ** –7.6 | Tim 27452W | Ws6IA | 1308 | 1888 | a | TD | 108 | 10½x3½x⅞ | T |
| 41 | .....664MA | ..... | 189 | 225 | 55000 | 1o950 | 11.00/22 | 12.00/20 | Con R6602 | 6–4½x5⅜ | 602 | 6.1 | 464 | 200–2600 | 7–3¼x14½ | Y | Spi 7741▼ | 12 | Tim SD462P | BR | R | ** –8.15 | Tim 27452W | Ws6IA | 1092 | 1624 | a | TD | 108 | 10½x3½x⅞ | T |
| 42 | F.W.D.....M6x6 | ..... | 243 | 276 | 58000 | ▲21400 | 11.00/24D | 11.00/24 | Wau 145GK | 6–5¼x6 | 779 | 6.2 | 585 | 186–2000 | 7–3½x17¾ | Y | Fu 5A920 | 10 | Wis SD462 | 2F | L | ** –10.6 | Wis F409 | Ws6IA | 1080 | 1680 | a | T6 | 183 | 10⅞x3x‡‡ | P |
| 43 | (D) ....M6X6D | ..... | 180 | 276 | 58000 | ▲21600 | 11.00/24D | 11.00/24 | Bu DC844 | 6–5¼x6½ | 844 | ... | 605 | 180–1800 | 7–3¾x17 | Y | Fu 5A920 | 10 | Wis SD462 | 2F | L | ** –10.6 | Wis F409 | Ws6IA | 1080 | 1680 | a | T6 | 216 | 10⅞x3x‡‡ | P |
| | International (2) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 44 | .....KB-6F.4R | 3100 | 151 | 194 | 22000 | 6915 | 7.00/20D | 8.25/20 | Own BLD250 | 6–3⅞x4½ | 251 | 6.3 | 200 | 100–3200 | 4–2¾x5‡‡ | N | Own F51 | 5 | Own RF1450 | SF | H | 6.16–6.66 | Own F470 | LH4IHV | 495 | 869 | c | PX | 77 | 8⅞x3⅞x⅞ | T |
| 45 | .....KB-8F.4R | 4700 | 161 | 215 | 27000 | 8575 | 8.25/20D | 9.00/20 | Own RED361 | 6–4⅛x4½ | 361 | 6.3 | 282 | 126–3000 | 7–3¼x10‡‡ | Y | Own F52 | 5 | Own RF1560 | SF | H | 6.50–7.16 | Own F550 | LH6IHV | 644 | 1105 | c | PX | 84 | 9¼x3⅞x3¾ | T |
| 46 | .....KB-11F.4R | 6750 | 161 | 215 | 37000 | 10830 | 9.00/20D | 10.00/20 | Own RED450 | 6–4¾x5 | 451 | 6.3 | 360 | 148–2600 | 7–3¼x10‡‡ | Y | Own F54 | 5 | Own RF1670 | SF | H | ** –7.16 | Own F760 | TW6IA | 738 | 1179 | G | PX | 84 | 10¼x3⅞x3¾ | T |
| 47 | .....W-4064H | 12600 | 203 | 239 | 40000 | 15360 | 10.00/22 | 11.00/22 | O-Con. 86749 | 6–5⅝x5½ | 749 | 6.0 | 554 | 254–2600 | 7–3¾x15¾ | Y | Spi 7741 | 4 | Tim SW3012 | WF | H | ** –6.16 | Own S6303 | BW6IA | 1168 | .... | G | FX | 108 | 10x3½x⅞ | C |
| | Kenworth | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 48 | .....(D).....522 | ..... | 187 | 245 | 43000 | 12900 | 10 00/20 | 11.00/22 | Cum HB6 | 6–4⅞x6 | 672 | 17. | 500 | 150–1800 | 7–4½x16½ | Y | BL 7841 | 4 | Tim U200P4● | | | ..... | Tim 36000TW | Ws4IA | 1135 | ..... | ..... | ..... | ..... | 9¼x3¼x⅞ | ... |
| 49 | .....(D)523.4R | ..... | 193 | 241 | 41000 | 14600 | 10.00/20 | 11.00/22 | Cum HB6 | 6–4⅞x6 | 672 | 17. | 500 | 150–1800 | 7–4½x16½ | Y | BL 7841 | 4 | Ti SW3012PA | WF | R | ** –6.16 | Tim 36000 | Ws4rIA | 924 | 1248 | a | TD | 102 | 9¼x3¼x⅞ | C |
| 50 | .....(D)524.4R | ..... | 193 | 241 | 54000 | 15100 | 10.00/20 | 11.00/22 | Cum HB6 | 6–4⅞x6 | 672 | 17. | 500 | 150–1800 | 7–4½x16½ | Y | BL 7841 | 4 | Tim SW452 | WF | R | 6.0 –7.6 | Tim 36000 | Ws4rIA | 819 | 1192 | a | TD | 102 | 9¼x3¼x⅞ | C |
| 51 | .....528.4R | ..... | 186 | 234 | 40000 | 12500 | 10.00/20 | 10.00/22 | Bud L0525 | 6–4½x5½ | 525 | 5.5 | 385 | 150–2200 | 7–3x11¼ | Y | Fu 5A620 | 5 | Ti SW3012PA | WF | R | ** –6.16 | Tim 35100 | Ws4rIA | 924 | 1248 | a | TD | 102 | 9¼x3¼x⅞ | C |
| 52 | .....532.4R | ..... | 186 | 234 | 35000 | 12500 | 10.00/20 | 10.00/22 | Wau 6MZA | 6–4¾x4¾ | 404 | 5.9 | 300 | 125–2500 | 7–2⅝x12½ | Y | Fu 5A430 | 5 | Ti SW3012PA | WF | R | ** –6.16 | Tim 35100 | Ws4rIA | 924 | 1248 | a | TD | 102 | 9¼x3¼x⅞ | C |
| 53 | .....(D)548.4R | ..... | 193 | 241 | 54000 | 17000 | 11.00/22 | 12.00/24 | Cum HB6 | 6–4⅞x6 | 672 | 17. | 500 | 150–2200 | 7–4½x16½ | Y | BL 7841 | 4 | Tim SD462 | DR | R | ** –8.15 | Tim 36000 | Ws4rIA | 819 | 1192 | a | TD | 109 | 9¼x3¼x⅞ | dbC |
| 54 | .....(D)552.4R | ..... | 255 | 255 | 54000 | 20700 | 13.00/24 | 13.00/24 | Cum HB6 | 6–4⅞x6 | 672 | 17. | 500 | 150–1800 | 7–4½x16½ | Y | BL 7841 | 4 | Tim SD462W | WF | R | ** –8.15 | Tim F3200W | Ws4rIA | 1109 | 1192 | a | TD | 168 | 9¼x3¾x⅞ | dbC |
| | Marmon-Herr. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 55 | (C).....CM5-6 | 2790 | 156 | .... | 22500 | ▲6673 | 7.50/20D | 7.50/20 | Ford | 8–3⅞x3¾ | 239 | 6.4 | 180 | 100–3800 | 3–2½x4.71 | N | Ford | 4 | Timken | S | H | ** –6.67 | Own M5 | M | 503 | .... | a | F | 82⅞ | 7½x3x¼ | C |
| 56 | (C).....CM6-6 | 2822 | 180 | .... | 22500 | ▲6710 | 7.50/20D | 7.50/20 | Ford | 8–3⅞x3¾ | 239 | 6.4 | 180 | 100–3800 | 3–2½x4.71 | N | Ford | 4 | Timken | S | H | ** –6.67 | Own M5 | M | 503 | .... | a | F | 106¾ | 7½x3x¼ | C |
| 57 | .....MH440-6 | ..... | 182 | .... | 34000 | ▲10600 | 9.00/20 | 10.00/20 | Her WXLC3‡ | 8–3⅞x3¾ | 404 | 5.4 | 239 | 118–2800 | 7–2¾x13¼ | Y | Fu 5A430 | 5 | Tim SFD154 | 2B | H | ** –8.43 | Tim F2090W | Ws...A | 876 | .... | C | F | 96 | 9‡‡x3x¼ | T |
| 58 | .....MH-555-6 | ..... | 182 | .... | 42000 | ▲14900 | 11.00/20 | 11.00/20 | Her RXC | 6–4⅝x5¼ | 529 | 6.3 | 390 | 131–2200 | 7–3x13¼ | Y | Fu 5A620 | 4♦5 | Tim SD3000 | 2B | H | ** –8.15 | Tim F3200W | Ws...A | 1092 | 1608 | ... | F | 93 | 10⅞x3x⅞ | T |

(Turn to Page 92, Please)

▲ Includes Cab. ♦ Auxiliary transmission, Spicer 8031. ▼ Auxiliary transmission Spicer 703F with 3 forward speeds. • Complete vehicle. † Timken T76—2 speed transfer case.
‡ Timken T77—2 speed transfer case. ° Three speed transmission—2 speed transfer case. ● Timken T13126PA Trailing Axle.

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# A.T.A. Serves U.S.A.


**SHIPPERS FAVOR** *trucks because of their flexibility of service, economy and door-to-door delivery. Consumers benefit from lower distribution costs. Realistic state regulation, instead of present hodge-podge of restrictions which make it impossible to operate any truck legally in all 48 states, is one of A.T.A.'s prime goals.*

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They provide the only commodity transportation for more than 25,000 U. S. communities. They are vital to the daily food supply of all major cities. They link the production lines of factories located hundreds of miles apart. In scores of ways, *the A.T.A. serves U. S. A.*

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*Cleveland, Ohio, U. S. A.*
THE WHITE MOTOR COMPANY OF CANADA LIMITED
Factory at Montreal

**FOR MORE THAN 45 YEARS THE GREATEST NAME IN TRUCKS**

(Turn to Page 92, Please)

‡ Includes Cab.
‡ Timken T77—2 speed transfer case.
♦ Auxiliary transmission, 5-Three speed transmission—2 speed transfer case.

(Continued from Page 90)

| Line Number | MAKE AND MODEL | Chassis List Price | WHEELBASE Minimum Standard | WHEELBASE Maximum Standard | Gross Vehicle Weight for Normal Service | Chassis Weight (See definition) | TIRE SIZES Standard Front and Rear | TIRE SIZES D-dual rear S-single rear | TIRE SIZES Maximum Authorized Tire Size (Duals un-less noted) | ENGINE DETAILS Make and Model | No. of Cylinders, Bore and Stroke | Displacement | Comp. Ratio | Torque lb. ft. | Max. Brake H.P. at R.P.M. Given | Number, Diameter and Length Main Bearings | Governor Standard | TRANSMISSION Make and Model | Forward Sp'ds | REAR AXLE Make and Model | Gear and Type | Drive ✕ Torque | Gear Ratio Range in High | FRONT AXLE Make and Model | BRAKES SERVICE Make, Location, Type, Operat'n | BRAKES SERVICE Lining Area | BRAKES SERVICE Drum Area | BRAKES SERVICE Drum Material | BRAKES Hand Location Type | C-A Dimensions (Min. Std. W. B.) | FRAME Side Rail Dimensions | FRAME Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Oshkosh W703 | | Opt | 45000 | 16950 | 11.00/20 | D | 12.00/20 | Her RXLD | 6–4½x5½ | 568 | 5.4 | 405 | 141–220 | 7–3½x13¼ | Yfu 5A650 | | 12 Tim SD454W | 2F | H ** –6.31 | Own-Tim | L6III | 1080 | 1625G | TX | Opt | 101½ | 3½–⅝ | B |
| 2 | (D) W1600BDH | | Opt | 60000 | 23700 | 11.00/24 | D | 12.00/24 | Bu 6DC844 | 6–5½x6½ | 844 | | | 600 180–1800 | 7–3½x17 | Yfu 4BI86 | | 12 Tim SD462 | 2F | H ** –6.14 | Own-Tim | LT61A | 1080 | 1625G | TX | 160 | 123½ | 3½–⅝ | B |
| 3 | (D) W1600BDH | | Opt | 60000 | 24300 | 14.00/24 | D | 14.00/24 | Bu 6DC844 | 6–5½x6½ | 844 | | | 600 180–1800 | 7–3½x17 | Yfu 4BI86 | | 12 Tim SD462 | 2F | H ** –9.82 | Own-Tim | LT61A | 1080 | 1625G | TX | 174 | 123½ | 3½–⅝ | B |
| 4 | (D) W1602BDH | | Opt | 95000 | 29300 | 14.00/24 | D | 14.00/24 | Bu 6DC844 | 6–5½x6½ | 844 | | | 600 180–1800 | 7–3½x17 | Yfu 4BI86 | | 12 Tim SD472 | 2F | H ** –13.9 | Own-Tim | LT61A | .... | 2217G | TX | 177 | 123½ | 3½–⅝ | B |
| 5 | W1600BG | | Opt | 60000 | 22770 | 11.00/24 | D | 12.00/24 | Bu MO893 | 6–5½x6 | 893 | | | 625 200–1800 | 7–3½x17 | Yfu 4BI86 | | 12 Tim SD462 | 2F | H ** –9.82 | Own-Tim | LT61A | 1080 | 1625G | TX | 160 | 123½ | 3½–⅝ | B |
| 6 | W1600CD | | Opt | 60000 | 23400 | 11.00/24 | D | 12.00/24 | Cum 6HBI | 6–4½x6 | 672 | | | 500 150–1800 | 7–4½x16 | Yfu 4BI86 | | 12 Tim SD462 | 2F | H ** –6.14 | Own-Tim | LT61A | 1080 | 1625G | TX | 174 | 123½ | 3½–⅝ | B |
| 7 | (D) W1600CDS | | Opt | 60000 | 23700 | 11.00/24 | D | 12.00/24 | Cum 6HBIS | 6–4½x6 | 672 | | | 635 200–1800 | 7–4½x16 | Yfu 4BI86 | | 12 Tim SD462 | 2F | H ** –9.82 | Own-Tim | LT61A | 1080 | 1625G | TX | 174 | 123½ | 3½–⅝ | B |
| 8 | (D) ‖W1600CDH | | Opt | 60000 | 24000 | 14.00/24 | D | 12.00/24 | Cum 6HBI | 6–4½x6 | 672 | | | 500 150–1800 | 7–4½x16 | Yfu 4BI86 | | 12 Tim SD462 | 2F | H ** –9.82 | Own-Tim | LT61A | 1080 | 1625G | TX | 172 | 123½ | 3½–⅝ | B |
| 9 | (D) ‖W1600CDSH | | Opt | 60000 | 24300 | 14.00/24 | D | 12.00/24 | Cum 6HBIS | 6–4½x6 | 672 | | | 635 200–1800 | 7–4½x16 | Yfu 4BI86 | | 12 Tim SD462 | 2F | H ** –6.14 | Own-Tim | LT61A | 1080 | 1625G | TX | 174 | 123½ | 3½–⅝ | B |
| 10 | Peterbilt(D) 344DT | | Opt | 43000 | 16250 | 10.00/20 | D | 11.00/22 | Cum HB600 | 6–4½x6 | 672 | 17.5 | 500 | 150–1800 | 7–4½x16½ | Ysp 7741 | | 12 Tim SW3012W | WF | A 6.00– 8.5 | T-36000W | W61A | 1212 | 1734a | FD | 100½ | 105 | 23½ | A |
| 11 | (D) ..... 345DT | | Opt | 54000 | 17300 | 10.00/20 | D | 11.00/22 | Cum HB600 | 6–4½x6 | 672 | 17 | 500 | 150–1800 | 7–4½x16½ | Ysp 7741 | | 12 Tim SW456W | WF | A 6.00– 10.2 | T-36000W | W61A | 1450 | 1626a | FD | 100½ | 105 | 23½ | A |
| 12 | (D) ..... 354DT | | Opt | 56000 | 17450 | 10.00/20 | D | 11.00/22 | Cum HB600 | 6–4½x6 | 672 | 17 | 500 | 150–1800 | 7–4½x16½ | Ysp 7741 | | 12 Tim SW456W | WF | A 6.00– 10.2 | T-27454W | W61A | 1450 | 1626a | FD | 100½ | 105 | 23½ | A |
| 13 | (D) ..... 355DT | | Opt | 56000 | 17900 | 10.00/20 | D | 11.00/22 | Cum HB600 | 6–4½x6 | 672 | 17 | 500 | 150–1800 | 7–4½x16½ | Ysp 7741 | | 12 Tim SD462W | 2F | A ** –8.15 | T-27454W | W61A | 1600 | 1626a | FD | 106½ | 105 | 23½ | A |
| 14 | Reo ..... 25TL | | Reo | 47000 | 12950* | 10.00/20 | | | Con B6427 | 6–4¼x4½ | 427 | 5.9 | 324 | 127–270 | 7–2⅝x13.5 | Y Cla 270V4▲■ | | 15 TSD3000 | SF2 | T | –7.5 Tim 35000 | W41A | 1020 | 1470 | var TD | 108⅝ | 9½ | x3½ | x⅜ | TP |
| 15 | Sterling HB8130 | | Opt | 32000 | 11000 | 8.25/20 | | 10.00/20 | Wau 6MZA | 6–4¼x4¼ | 404 | 5 | 260 | 130–3000 | 7–2⅝x12½ | Yfu 5A43 | | 5 T-SBD1555DPH | SF | L 6.80–13.14 | T-35011H | T61HV | 664 | 1134 | A | TX | 83 | 9x3¼ | x¼ | A |
| 16 | ..... HB8140 | | Opt | 36000 | 11800 | 8.00/20 | | 10.00/20 | Wau 6MZA | 6–4¼x4¼ | 404 | 5 | 290 | 130–3000 | 7–2⅝x12½ | Yfu 5A43 | | 5 T-SD3010PA | 2F | L 6.84–10.22 | T-35011TW | W61A | 1074 | 1554 | A | TX | 83 | 9x3¼ | x¼ | A |
| 17 | ..... HWS160 | | Opt | 42000 | 12500 | 10.00/20 | | 11.00/22 | Wau 6BRKR | 6–4½x5¼ | 517 | 5 | 368 | 125–2250 | 7–3⅛x17¾ | Yfu 5A62 | | 5 T-8W3010PA | WF | L 5.40–8.50 | T-36000TW | W61A | 1082 | 1574 | A | TX | 92 | 9¼ | x¼ | A |
| 18 | ..... HWS235 | | Opt | 52000 | 15700 | 11.00/20 | | 11.00/24 | Wau 145GK | 6–5¼x6 | 786 | 5 | 585 | 186–2100 | 7–3½x17¾ | Yfu 4BI86 | | 4 T–8W.x56P | WF | I 5.67–8.20 | T-27454W | W61A | 1308 | 1892 | A | TX | 92 | 9¼ | x¾ | A |
| 19 | (D) ..... HWS160H | | Opt | 42000 | 14250 | 10.00/20 | | 11.00/22 | Cum HB600 | 6–4½x6 | 672 | 17 | 500 | 150–1800 | 7–4½x16½ | Yfu 4BI86 | | 4 T–8W3012PA | WF | L 4.71–6.17 | T-36000TW | W61A | 1082 | 1574 | A | TX | 92 | 9¼ | x¼ | A |
| 20 | (D) ..... HWS235H | | Opt | 52000 | 16000 | 11.00/20 | | 11.00/24 | Cum HB600 | 6–4½x6 | 672 | 17 | 500 | 150–1800 | 7–4½x16½ | Yfu 4BI86 | | 4 T–SW456P | WF | L 5.66–8.20 | T-27454W | W61A | 1308 | 1892 | A | TX | 92 | 9¼ | x¾ | A |
| 21 | ..... HCS195 | | Opt | 48000 | 15300 | 10.00/20 | | 11.00/22 | Wau 140GK | 6–4½x5½ | 5256 | 0 | 426 | 142–2200 | 7–3¼x13¾ | Yfu 5A62–3A92 | | 15 Own 195W | CD | R 6.04–7.31 | T-36000TW | W61A | 1052 | 1622 | A | TX | 83 | 9¼ | x¾ | A |
| 22 | ..... HCS265 | | Opt | 60000 | 17750 | 11.00/20 | | 12.00/24 | Wau 145GK | 6–5¼x6 | 7796 | 2 | 585 | 186–2100 | 7–3½x17¾ | Yfu 4BI86 | | 12 Own 265W | CD | R 9.21–13.16 | T-27454W | W61A | 1060 | 1732 | A | TX | 92 | 9¼ | x¾ | A |
| 23 | ..... HCS297 | | Opt | 70000 | 20750 | 12.00/24 | ● | 13.00/24 | Wau 145GK | 6–5¼x6 | 7796 | 2 | 585 | 186–2100 | 7–3½x17¾ | Yfu 4BI86 | | 12 Own 330W | CD | R 9.21–13.16 | T-27454W | W61A | 1280 | 1872 | A | TX | 92 | 9¼ | x¾ | AL |
| 24 | ..... HCS330 | | Opt | 80000 | 23150 | 12.00/24 | | 14.00/24 | Wau 145GK | 6–5¼x6 | 7796 | 2 | 585 | 186–2100 | 7–3½x17¾ | Yfu Fu4B86–3A92 | | 12 Own 330W | CD | R 9.21–13.16 | T-27454W | W61A | 1280 | 1872 | A | TX | 91 | 9¼ | x¾ | AL |
| 25 | (D) ..... HCS195H | | Opt | 48000 | 16000 | 10.00/20 | | 11.00/22 | Cum HB600 | 6–4½x6 | 672 | 17 | 500 | 150–1800 | 7–4½x16½ | Yfu 4BI86 | | 12 Own 195W | CD | R 6.04–7.31 | T-36000TW | W61A | 1060 | 1732 | A | TX | 92 | 9¼ | x¾ | A |
| 26 | (D) ..... HCS265H | | Opt | 60000 | 18100 | 11.00/20 | | 12.00/24 | Cum HBD600 | 6–4½x6 | 672 | 17 | 500 | 150–1800 | 7–4½x16½ | Yfu 4BI86 | | 12 Own 265W | CD | R 9.21–13.16 | T-27454W | W61A | 1280 | 1872 | A | JX | 92 | 9¼ | x¾ | AL |
| 27 | (D) ..... HCS297H | | Opt | 70000 | 21050 | 12.00/24 | ● | 13.00/24 | Cum HBD600 | 6–4½x6 | 672 | 17 | 500 | 150–1800 | 7–4½x16½ | Yfu 4BI86 | | 12 Own 330W | CD | R 9.21–13.16 | T-27454W | W61A | 1280 | 1872 | A | JX | 91 | 12x3½ | x⅜ | AL |
| 28 | (D) ..... HCS330H | | Opt | 80000 | 23450 | 12.00/24 | | 14.00/24 | Cum HBD600 | 6–4½x6 | 672 | 17 | 500 | 150–1800 | 7–4½x16½ | Yfu 4BI86 | | 12 Own 330W | CD | R 9.21–13.16 | T-27454W | W61A | 1280 | 1872 | A | JX | 91 | 12x3½ | x⅜ | AL |
| 29 | Trucksteel ..... F2X26 2F | | | 26000 | ▲5000 | 7.50/20 | | 8.25/20 | Ford | 8–3¾x3¾ | 239 | 6 | 418 | 100–3800 | 3–2¼x4.71 | N Ford | | 4 Ford | SF | ** –6.67 | Ford | F61HV | 502 | 836 | Co TX | | 82¼ | 7½ | x3x | .47 | CT |
| 30 | (C) ..... F2X27–0 2F | | | 27000 | ▲6450 | 7.50/20 | | 8.25/20 | Ford | 8–3¾x3¾ | 239 | 6 | 418 | 100–3800 | 3–2¼x4.71 | N Ford | | 8 Eat 1350 | SFd | . 5.83–8.11 | Ford | F61HV | 502 | 836 | Co TX | | 82½ | 7½ | x3x | .47 | CT |
| 31 | (C) ..... F2X34 2F | | | 34000 | ▲8335 | 7.50/20 | | 9.00/20 | Ford | 8–3¾x3¾ | 239 | 6 | 418 | 100–3800 | 3–2¼x4.71 | N F and BL | | 12 Cla R1250 | SF | . 5.67–6.83 | Ford | F61HV | 635 | 1033 | Co TX | | 82½ | 7½ | x3x | .47 | CT |
| 32 | (C) ..... F3X34–0 | | | 34000 | ▲8585 | 7.50/20 | | 9.00/20 | Ford | 8–3¾x3¾ | 239 | 6 | 418 | 100–3800 | 3–2¼x4.71 | N Ford and BL | | 12 Cla R1250 | SF | . 5.67–6.83 | Ford | F61HV | 635 | 1033 | Co TX | | 82½ | 7½ | x3x | .47 | CT |
| 33 | ..... F4X26 4R | | | 26000 | ▲6300 | 7.50/20 | | 8.25/20 | Ford | 8–3¾x3¾ | 239 | 6 | 418 | 100–3800 | 3–2¼x4.71 | N Ford | | 8 Ford | SF | . 6.07–10.5 | Ford | F61HV | 502 | 836 | Co TX | | 63¾ | 7½ | x3x | .47 | CT |
| 34 | ..... F4X27–0 | | | 27000 | ▲6300 | 7.50/20 | | 8.25/20 | Ford | 8–3¾x3¾ | 239 | 6 | 418 | 100–3800 | 3–2¼x4.71 | N Ford | | 8 Ford | SF | . 6.07–10.5 | Ford | F61HV | 502 | 836 | Co TX | | 63¾ | 7½ | x3x | .47 | CT |
| 35 | ..... F4X29 4R | | | 29000 | ▲7000 | 7.50/20 | | 8.25/20 | Ford | 8–3¾x3¾ | 239 | 6 | 418 | 100–3800 | 3–2¼x4.71 | N Ford | | 16 Eat 1350 | SFd | . 7.47–12.9 | Ford | F61HV | 502 | 836 | Co TX | | 63¾ | 7½ | x3x | .47 | CT |
| 36 | ..... F4X30–0 | | | 30000 | ▲7200 | 7.50/20 | | 8.25/20 | Ford | 8–3¾x3¾ | 239 | 6 | 418 | 100–3800 | 3–2¼x4.71 | N Ford | | 16 Eat 1350 | SFd | . 7.47–12.9 | Ford | F61HV | 502 | 836 | Co TX | | 63¾ | 7½ | x3x | .47 | CT |
| 37 | (C) ..... C2X26 2F | | | 26000 | ▲5800 | 7.50/20 | | 8.25/20 | Chevrolet | 6–3¾x3¾ | 235 | 6 | 192 | 93–3100 | 4–2¼x5.5 | N Chevrolet | | 4 Chevrolet | SFd | . 7.47–12.9 | Chevrolet | C61HV | 546 | 780 | Co 2I | | 82¼ | 9½ | x3x | .50 | CT |
| 38 | (C) ..... C2X28 2F | | | 28000 | ▲6500 | 7.50/20 | | 8.25/20 | Chevrolet | 6–3¾x3¾ | 235 | 6 | 192 | 93–3100 | 4–2¼x5.5 | N Chevrolet | | 8 Tim | SFd | . 6.64–8.22 | Chevrolet | C61HV | 659 | 1033 | Co TX | | 82¼ | 9½ | x3x | .50 | CT |
| 39 | (C) ..... C2X34 2F | | | 34000 | ▲8590 | 7.50/20 | | 9.00/20 | Chevrolet | 6–3¾x3¾ | 235 | 6 | 192 | 93–3100 | 4–2¼x5.5 | N C and BL | | 8 Cla R1250 | SF | . 5.67–6.83 | Chevrolet | C61HV | 659 | 1033 | Co TX | | 82¼ | 9½ | x3x | .50 | CT |
| 40 | ..... C2X34–0 | | | 34000 | ▲8420 | 7.50/20 | | 9.00/20 | Chevrolet | 6–3¾x3¾ | 235 | 6 | 192 | 93–3100 | 4–2¼x5.5 | N C and BL | | 12 Cla R1250 | SF | . 5.67–6.83 | Chevrolet | C61HV | 546 | 780 | Co 2I | | 63¾ | 7½ | x3x | .47 | CT |
| 41 | ..... C4X26 4R | | | 26000 | ▲6120 | 7.50/20 | | 7.50/20 | Chevrolet | 6–3¾x3¾ | 235 | 6 | 192 | 93–3100 | 4–2¼x5.5 | N Chevrolet | | 8 Chevrolet | SF | . 6.41–11.1 | Chevrolet | C61HV | 546 | 780 | Co 2I | | 63¾ | 7½ | x3x | .47 | CT |
| 42 | ..... C4X27–0 | | | 27000 | ▲6230 | 7.50/20 | | 7.50/20 | Chevrolet | 6–3¾x3¾ | 235 | 6 | 192 | 93–3100 | 4–2¼x5.5 | N Chevrolet | | 16 Eat 1350 | SFd | . 7.47–12.9 | Chevrolet | C61HV | 512 | 836 | Co TD | | 63 | 7½ | x3x | .47 | CT |
| 43 | ..... C4X29 4R | | | 29000 | ▲7200 | 7.50/20 | | 8.25/20 | Chevrolet | 6–3½x3⅞ | 235 | 6 | 192 | 93–3100 | 4–2¼x5.5 | N Chevrolet | | 16 Eat 1350 | SFd | . 7.47–12.9 | Chevrolet | C61HV | 512 | 836 | Co TD | | 63 | 7½ | x3x | .47 | CT |
| 44 | ..... C4X30–0 | | | 30000 | ▲7200 | 7.50/20 | | 8.25/20 | Chevrolet | 6–3½x3⅞ | 235 | 6 | 192 | 93–3100 | 4–2¼x5.5 | N Chevrolet | | 16 Eat 1350 | SFd | . 7.47–12.9 | Chevrolet | C61HV | 512 | 836 | Co TD | | 63 | 7½ | x3x | .47 | CT |

▲ Includes cab. ● Rear only; Front 11.00/24. ♦ Auxiliary transmission, Spicer 8031. △ Rear only; Front 12.00/24. ‖—Hydraulic Coupling. ↓—Chassis Weights on Duals Front, Center and Rear. ■ 6031 Auxiliary Transmission

## MOBILE TELEPHONE BOSTON TO WASHINGTON

Vehicles equipped for highway telephone service can now make and receive telephone calls at any point along the entire route between Boston and Washington, D. C., according to an announcement from the American Telephone and Telegraph Co.

Opening of continuous telephone service for mobile units between the New England metropolis and the nation's capital follows completion of the last link in the 450-mile chain of radiotelephone stations, each serving a radius of approximately 25 miles.

The new service is for motor vehicles on the mainly traveled routes and nearby highways within reach of the 250-watt transmitters situated at or near Boston, Providence, New London, New Haven, New York, New Brunswick, Trenton, Philadelphia, Wilmington, Baltimore and Washington. There are two New York stations: one in Manhattan and one near Mt. Kisco.

The Boston-Washington system is the third such chain to be placed in service by the Bell System. The first to provide continuous telephone service over a considerable stretch of highway began operation between St. Louis and Chicago early this year. The second was the N. Y.-Albany system which opened a few weeks ago. These three systems are links in what is expected to become, through the combined efforts of the Bell system and independently-owned connecting telephone companies, a nation-wide network serving the major highways of America.

Telephone calls from a vehicle are picked up by the nearest of several auxiliary receivers spotted at frequent intervals between the main transmitting-receiving stations.

To make a call, the driver lifts the telephone handset from its receptacle and gives the mobile service operator the number he wishes to call.

When a person wishes to call a telephone-equipped car or truck, he asks the long distance operator for the mobile service operator and gives the latter the vehicle's telephone number and aproximate location. The operator at the station nearest the mobile unit, by dialing this number, sends out a radio signal which rings a bell and lights a lamp in that particular vehicle. If the call is unanswered the lamp remains lighted so that the driver, when he returns, will know he has been called.

# INTRODUCING . . .

. . . I. L. PIERCE as director of the Ford Motor Co. service department. The department was formerly operated in conjuntion with parts and accessories sales.

. . . H. HARDEN ALLISON as sales manager of the Gilmer division, United States Rubber Co. The division, located in Philadelphia, manufacturers and distributes V-belts.

. . . BENJAMIN S. ROGERS as sales manager of the Arrow Safety Device Co., Mount Holly, N. J.

. . . PHIL (RED) SHAFER, former racing car enthusiast, as fleet sales engineer for the Thermoid Co. with headquarters in Chicago.

. . . LOREN E. BOYSEL, former engineer with Fisher Body Co., as body engineer for Willys-Overland Motors.

. . . ALFRED MARCHEV as president and general manager of Aircraft Screw Products Co., Long Island City, N. Y.

. . . HARRY E. WEILLER as Louisville district sales manager for Reybolds Metal Co.

. . . CHARLES E. FRANKS as newly-elected director and executive vice-president of The Wayne Pump Co., Fort Wayne, Ind.

. . . J. E. ELRICH as vice-president and general sales manager of International Battery Corp., Los Angeles.

. . . JOHN G. CALEY as manager of the National Accounts Department for the Southern Division of Mack Trucks, Inc., with headquarters in Atlanta.

. . . O. L. HOWLAND as sales manager of the Welding Division, Metal & Thermit Corp., New York.

. . . A. F. BOUCHER as district manager in Milwaukee for the Lincoln Electric Co. and MARSHALL FORD as district manager in Minneapolis.

. . . WILLIAM L. HAUCK as eastern district sales manager of the Weatherhead Co., Cleveland, Ohio.

. . . C. E. PALMER, named vice president in charge of manufacturing of the Mechanics Universal Joint Division of Borg-Warner Corp. plant in Rockford, Ill., and Memphis, Tenn. FRED M. POTGIETER, who will have charge of truck, agricultural implement, industrial and aviation sales in both the division's plants.

. . . J. R. ANDERSON as district manager for Pennsylvania, Eastern Ohio and West Virginia for the Sorensen Mfg. Co., Woodside, L. I.

. . . R. W. HENDERSON, as West Coast division manager for Prest-O-Lite Battery Co., Inc., with headquarters in Los Angeles.

. . . WALTER BOCKSTAHLER recently elected president of the Inter-State Motor Freight System, Grand Rapids, Mich.

. . . L. D. BAX ORGANIZATION of Denver appointed representative for the complete Wix line of merchandise.

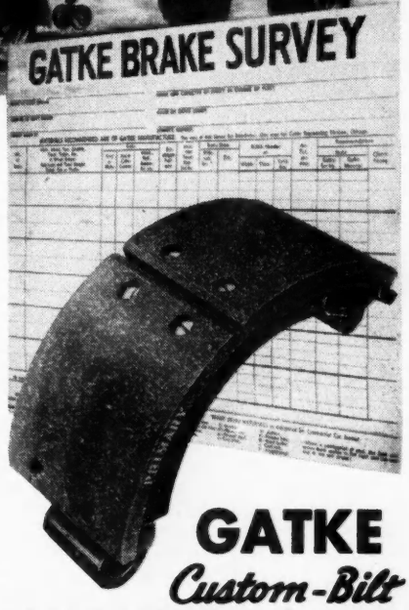
. . . T. W. PUTMAN appointed supervisor of National Fleet Service of Chevrolet Motor Division of General Motors Corp.

. . . CHARLES S. SLITER appointed assistant general sales manager for the Kellogg Division of the American Brake Shoe Co., New York, N. Y.

. . . A. H. FERNALD as New England district representative for the Packard Electric Division, General Motors Corp. His headquarters will be in Boston.

. . . The following recent appointees of Raybestos-Manhattan Inc.'s Equipment Sales Division: HARRY C. DISHMAN as Equipment sales manager in Detroit; GEORGE T. YOUNG, branch manager at Detroit; E. E. JUERENS, branch manager at Cleveland, and JOHN E. COLE, branch manager at Chicago.






For today's conditions you need all the *extra advantages* of GATKE Genuine *CUSTOM-BILT* Brake Blocks—

They *retain holding power at all service temperatures* — no let down in heavy traffic or on long grades.

The *smooth, non-grabbing action* reduces wear and tear on tires, vehicles and drivers.

*Dependability* and *Long Wear Life* keep equipment rolling with *reduced maintenance* time and expense.

The GATKE Brake Survey brings you the *fullest advantages* of GATKE Genuine *CUSTOM-BILT* Brake Linings and conserves your time.

Ask your GATKE Jobber or write.

GATKE *Custom-Bilt* BRAKE BLOCKS and LINERS

Gatke CUSTOM-BILT BRAKE LININGS

BLOCKS SETS ROLLS SHEETS

GATKE CORPORATION

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# WASHINGTON RUNAROUND

**ICC Revise Months Away**
**Design Features Emphasized**
**Leasing Gets Attention**

**FCC Radio Hearing Oct. 27**
**Permanent Identifications**
**Registration Record in '47**

by *GENE HARDY*
CCJ Washington Bureau

## ICC Revise Months Away

The revised draft of the ICC Motor Carrier Safety regs is still many months away from completion. ICC officials say that it will be late winter or early spring before the draft is issued simultaneously with the announcement of public hearings.

Informal conferences on Part 7, pertaining to the transportation of explosives and other dangerous articles, began last month when ICC officials met with representatives of insurance firms and labor organizations. On Oct. 16 they met with shippers, carriers and state officials. The last conference is scheduled for the week of Nov. 10 in Chicago, when the ICC will sit down with technical experts in the petroleum, chemical and explosives industries.

After these conferences are completed, Part 7 will be re-drafted and combined with the new drafts of Part 1 to 6, so that all of the proposed changes will be available in one package when the public hearings begin.

## Design Features Emphasized

In this second draft, substantial revision of the sections specifying design features in vehicles can be expected. Many of these were merely trial balloons and met with vigorous objections from carriers, shippers and manufacturers. ICC poliycy on this subject runs something like this: In cases where satisfactory safety requirements cannot be obtained voluntarily from the manuturers, strict specifications will be written into the rules. The ICC is quite willing to forego writing vehicle specifications into its rules provided adequately safety can be assured by other means.

## Leasing Gets Attention

Leasing agreements among carriers are currently receiving considerable attention at the ICC. While there is no prohibition against the leasing of rights, the Commission reports that it has found numerous cases of partial leasing resulting in the carrier leasing and exercising his rights at the same time.

It is also reported that many carriers are leasing their equipment under such loose requirements so as to amount to partial leasing of rights.

In these cases, the purported lack of responsibility on the part of the lessee is particularly disturbing to the ICC. Commission officials have found, in many instances, that such lessees do not properly maintain their vehicles, report accidents properly, keep logs and, in general have little or no knowledge of ICC regulations.

If the Commission fails to find an administrative solution to these difficulties, it is not unlikely that regulations covering leasing agreements will be issued.

## FCC Radio Hearing, Oct. 27

A hearing on the allocation of permanent frequencies to users of mobile radio-telephone facilities will begin before the Federal Communications Commission on Oct. 27. On the basis of evidence presented by truckers, bus operators and others and the number of frequencies available for such service, FCC will draw up rules and regulations to meet the over-all demand.

Under existing experimental authorizations, common carrier type of mobile radiotelephone service is expanding at a very rapid rate, with the urban service somewhat more in demand than the highway service. The rate of expansion is delayed only by the inability of manufacturers to furnish the necessary equipment.

Even so, urban common carrier mobile service has been authorized in about 60 cities in the United States, and also in Honolulu. Highway service is proposed for 79 domestic cities, and two in Hawaii.

## Temporary Rights Extended

The ICC late last month announced that temporary authorities granted under the Second War Powers Act would be extended until further notice wherever applications for permanent authority had been filed. Reason for the decision was the fact that the Commission realized it would not have time to act on many of the cases before the expiration date set for Sept. 27.

## Oklahoma Joins Reserve

The Army has announced that The Associated Motor Carriers of Oklahoma City, Okla., have signed an agreement for the establishment of a reserve unit within their organization under the War Department affiliation program. This organization, the second trucking company to sign, will set up a Headquarters & Headquarters Company within a Highway Transport Division.

Negotiations are under way to sign up additional units in all branches of transportation. Firms in many lines of business, such as bakeries and laundries, are also being brought in along with their fleets and trucks.

## Tires Still Under Control

Elimination of government controls over the use of natural rubber in the manufacture of non-transportation items by Dept. of Commerce has resulted in the concentration of synthetic rubber usage in the transportation field, principally tires and tubes. The action was taken in line with the Government's policy of lifting controls as rapidly as supply conditions permit. Remaining controls will continue in effect until Congress establishes a long-term national rubber policy.

Tire specifications remain unchanged by the lifting of restrictions on non-transportation items. Large size truck and bus tires up to 11.00 cross section may still contain up to 94 per cent natural rubber. Larger sizes are unrestricted.

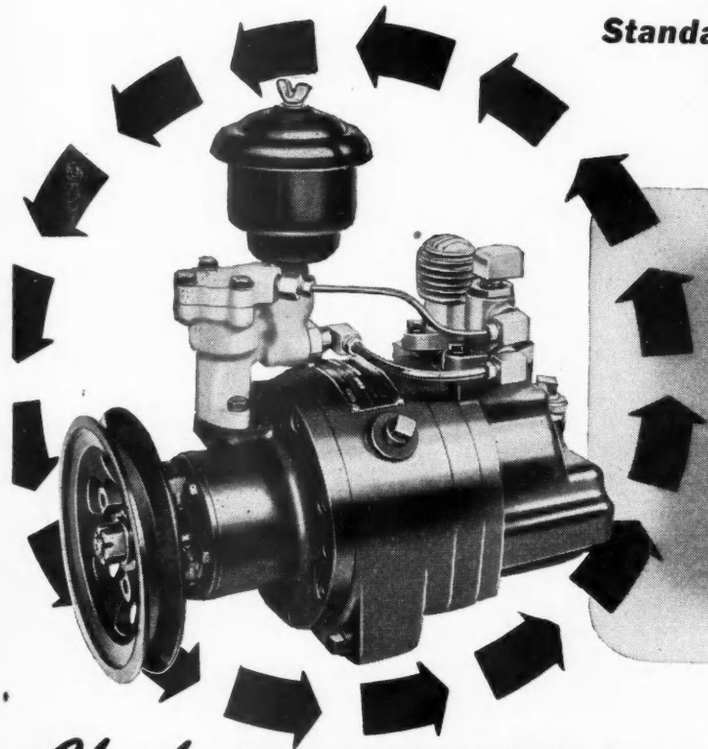
## Registration Record in '47

The number of motor vehicles registered by the end of the year will break all previous records, according to figures compiled by the Public Roads Administration. Truck registrations in 1947 will climb to an estimated 6,492,000 by the end of the year, an increase of 13.4 per cent over the 1946 total of 5,725,692 registrations, and 33.6 per cent more than 4,859,244 trucks registered in 1941. The percentage of increase in truck registrations is higher than in any other class of motor vehicle.

The number of automobiles registered during the year is expected to reach a

(TURN TO PAGE 98, PLEASE)

# AIR--and Lots of it!



Standardize on

## Wagner Air Brakes

**. . . the system with the ROTARY COMPRESSOR ---that provides air to spare for all braking needs.**

## *Check* THESE ADVANTAGES of the WAGNER Rotary Air-Compressor

Every part of an air brake system is important—but the most important of all is the compressor—the *heart* of the air brake system. Not only must it operate unfailingly to assure plenty of air at all times, but it must do so economically. The Wagner Rotary Compressor meets both these requirements.

Only the Wagner rotary compressor has ALL of these features so desirable in automotive air brake systems:

Rotary motion of all moving parts.

In running balance at all times.

Longer belt life due to more uniform torque loading.

Low friction losses—therefore high operating efficiency.

A predetermined air pressure range automatically maintained.

Operating parts are lightly stressed, thereby insuring long life and low maintenance cost.

Extremely quiet in operation.

Self-contained oiling system—uncontaminated by engine waste products.

Compact—requires minimum installation space.

Low operating temperature prevents carbon formation in the compressor and delivery lines.

Adaptable to *all* types of automotive brake systems.

**For complete information, write for Bulletin KU-50B, addressing your request to Wagner Electric Corporation, 6470 Plymouth Avenue, St. Louis 14, Mo.**

Wagner Electric Corporation EST. 1891

LOCKHEED HYDRAULIC BRAKE PARTS and FLUID · NoRoL CoMoX BRAKE LINING · AIR BRAKES · TACHOGRAPHS ELECTRIC MOTORS · TRANSFORMERS · INDUSTRIAL BRAKES

The System With The Rotary Compressor

K47-5

## Washington Runaround

(CONTINUED FROM PAGE 96)

total of 30,545,000 as compared with 28,100,188 automobile registrations in 1946 and 29,525,101 in 1941. The estimated total of motor vehicle registrations in 1947 will soar to an all-time high of 37,164,000, surpassing 1946 registrations by more than 3,218,000 and exceeding registrations in 1941, the previous peak year, by approximately 2,690,000.

### 15,353 Vehicles for Disabled

Included among the 15,353 vehicles given to seriously disabled veterans of World War II by August 1, 1947, were 76 trucks; 12 jeeps, 42 tractors, 15 station wagons, and 15,208 passenger automobiles comprised the remainder. Under the law passed by Congress last year, disabled veterans have until June 30, 1948, to apply for automotive vehicles at government expense.

### Is Trucking Representative?

The joint House-Senate Labor Committee set up to police the operation of the Taft-Hartley law has dropped its plan to study industries having both good and bad labor relations histories and instead will study representative industries. While the trucking industry was included in the original list, under the new program, it had not been decided, as this issue went to press, whether trucking would be included in the list of 20 to 25 representative industries.

Actually, the Joint Committee is not very far along in its plans. The full committee met for the first time on Oct. 7 to discuss organizational matters. The Committee staff hopes that hearings may get started by December.

### Permanent Identifications

A Special Committee on Identification of Vehicles of the American Association of Motor Vehicle Administrators has recommended that a permanent identification number be required for all vehicles.

The Committee has suggested that it be stamped into the cowl under the hood, in the front door post or some other position where it might be readily available for inspection. Such a number would be used for all registration and identification purposes without regard to motor numbers. The Administrators have apparently decided as the result of experience in recent years that the motor number is unsatisfactory as identification.

In a recent survey only one of the 48 state administrators suggested that motor numbers be used as the only method of identification.

*END*

*(Please resume your reading on P. 100)*

### NEW LINING ADHESIVE MAY OUTMODE RIVETS

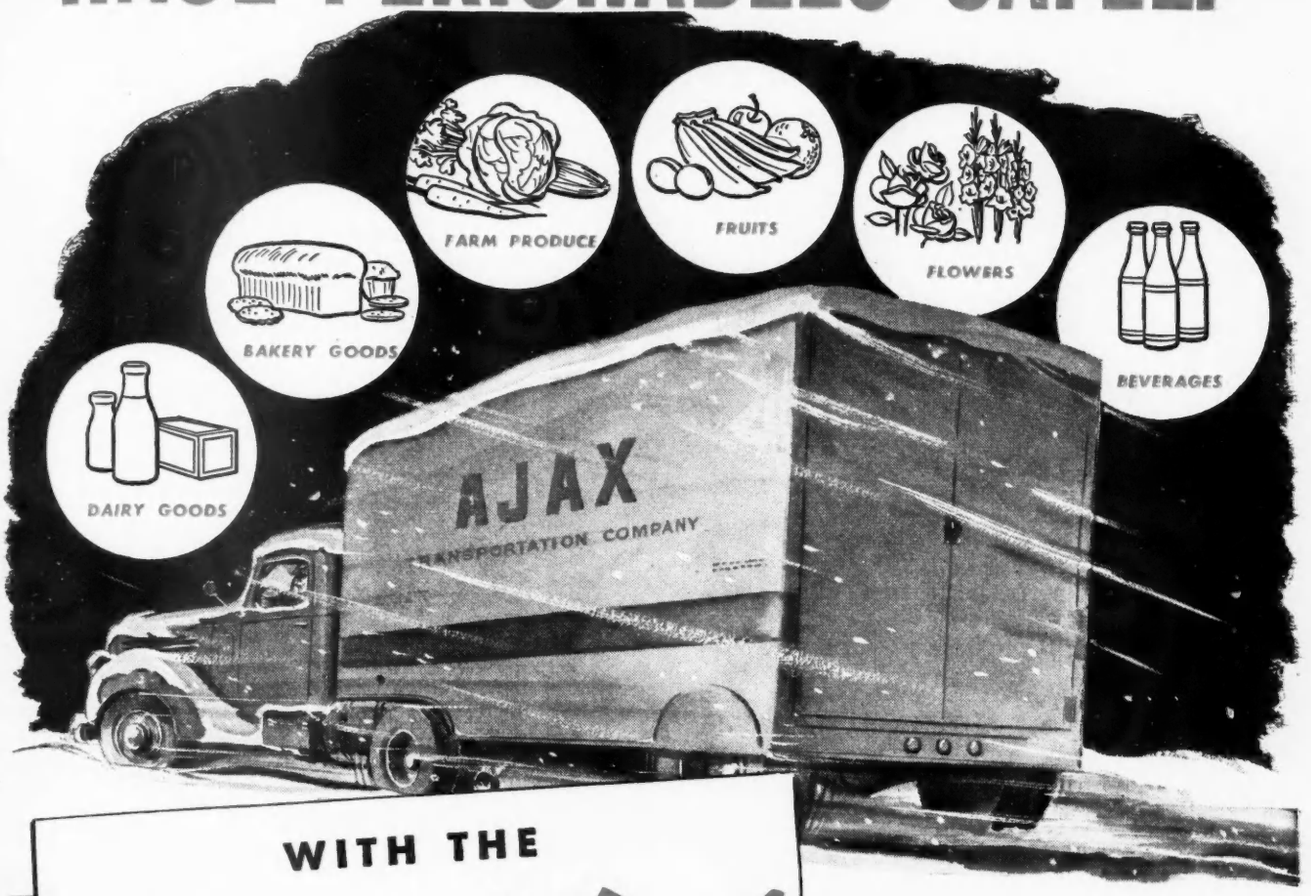
A new adhesive that has more than twice the shear-resistance strength of brass rivets in anchoring automotive brake linings and eliminates all danger of rivet-scoring of brake drums has been developed by The B. F. Goodrich Company in collaboration with one of the country's major auto concerns.

The material, which is "entirely synthetic," will be used starting this fall in brakes of the commercial vehicles of the interested automotive manufacturer, and ultimately in its passenger cars, the announcement said.

Two chief advantages of the adhesive, called Plastilock 601, over the conventional method of attaching brake lining by rivets, according to J. E. Thomas of The B. F. Goodrich Company, are (1) the brake lining can be worn "right down to the shoe" before need for replacing, instead of only about half way, and (2) there is no possibility of rivet heads cutting ridges in the brake drum.

Tests conducted by the automotive concern, Thomas said, showed that rivets start to shear at 3500 pound and fail at 5000, while lining attached by the new adhesive held fast until 11,000 pounds of shearing pull were applied.

# HAUL PERISHABLES SAFELY




## WITH THE

# South Wind

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## CARGOHEATER

- **Easily Installed** and transferred.
- **Compact.** Less than 2 cubic feet required, saves valuable cargo space.
- **Thermostatic Temperature Control.** Set it for desired temperature and forget it. Keeps temperature in cargo space constant without attention from driver.
- **Quick Warm-Up** . . . full heat in less than 1 minute. 20,000 BTU's per hour.
- **Independent of Engine.** Can be operated during loading or for standby heating.

It's the biggest little package of heating power yet invented. It has been thoroughly proved in aircraft and on the highways. The new South Wind Cargoheater is compact and economical. It is definitely the answer to the hazards of hauling perishable cargo in freezing weather.

The heater is extremely flexible in its application and can be used for heating cab as well as cargo space.

Why not talk over your truck heating problems with our engineers? Let them give you the inside facts about this great new South Wind development. Write to South Wind Division, Stewart-Warner Corporation, Indianapolis 7, Indiana.

Another Product of STEWART WARNER

# CCJ NEWSCAST

### SEABOARD GETS TRUCK RIGHTS

Although bitterly opposed by the ATA and other trucking authorities, the ICC has granted broad motor carrier rights to the Seaboard Air Line Railway Co. for operation of a highway transport substitute service roughly paralleling the railroad's lines in five southeastern states.

Also granted was permission to serve various off-line points. But in general the service is to be "auxiliary to or supplemental of" service by rail.

### ICC PROBES ACCOUNTING PLAN

Regarded as a highly significant test case was an ICC order issued in mid-September for an investigation of accounting practices of Modern Transfer Co., Inc., Allentown, Pa. The inquiry will deal not only with accounting but also with salaries and allowances to officers and others.

### PENNA. TAXES DIESEL FUEL

Pennsylvania has instituted a 4-cent a gallon tax on diesel fuels. The Fuel Use Tax Act (Act No. 497) which also provides elaborate requirements for reporting the tax became effective Sept. 1.

The state's Secretary of Revenue has also served notice that Section 902 (c) (1) of the vehicle code, prohibiting the operation of any vehicle with more than one other vehicle attached, will be enforced beginning April 1, 1948. Until now vehicles licensed prior to June 29, 1937 had been excepted.

### 476 EXHIBITORS FOR ASIS

Space drawing at Chicago's Congress Hotel drew representatives of 476 companies—the largest number ever to exhibit at an Automotive Service Industries Show. A total of 1163 spaces having a combined area of 153,000 sq ft were assigned at the drawing. Last year's Atlantic City show drew 430 exhibitors utilizing 127,000 sq ft.

There is every indication that the 1947 edition of the ASI Show being held Dec. 8-13 at Navy Pier, Chicago, will be the most successful in history.

### Take on a Payload

**What will '48 Ford engines be like? What is Nash doing in truck Field? Will there be an auto show in '48? What's the latest from Hudson?**

**Read the**
***DETROIT DISPATCH***
**on page 57**

### DATES & DOINGS

**OCT. 26-30—American Trucking Associations, Inc., Annual Convention, The Biltmore, Los Angeles, Calif.**

**OCT. 27-31—Fleet Supervisor Training Course, Ohio State University, Columbus, Ohio.**

**NOV. 3-7—Motor Vehicle Maintenance Supervisors, Second Annual Short Course, Pennsylvania State College, State College, Pa.**

**NOV. 3-7—Fleet Supervisor Training Course, Purdue University, Lafayette, Ind.**

**NOV. 5-7—American Society of Body Engineers Annual Technical Convention, Rockham Memorial Bldg., Detroit, Mich.**

**NOV. 10-14—Fleet Supervisor Training Course, Georgia School of Technology, Atlanta, Ga.**

**NOV. 17-21—Fleet Supervisor Training Course, University of Florida, Gainesville, Fla.**

**NOV. 30-DEC. 1—Missouri Bus & Truck Assn., Annual Convention, Hotel Governor, Jefferson City, Mo.**

**DEC. 5-6—Virginia Highway Users Assn. Annual Convention, Hotel Roanoke, Roanoke, Va.**

**DEC. 8-13 — Automotive Service Industries Show, Navy Pier, Chicago, Ill.**

**JAN. 12-16, 1948—Annual Meeting Society of Automotive Engineers, Book-Cadillac Hotel, Detroit, Mich.**

**JULY 16-24, 1948 — Road Show, American Road Builders' Assn., Soldier Field, Chicago, Ill.**

### NEW REGISTRATIONS STILL HIGH

New truck registrations for July totaled 71,647 units compared with 53,657 during the same month a year ago and 65,458 in June according to R. L. Polk & Co. Based on returns from 25 states the August estimate is 75,500. For full details by make and by state see page 78.

### INDUSTRIAL NOTES

The Aircraft Standard Parts Co., formerly of Rockford, Ill. and best known for its "Aero-Seal" hose clamp, is now a division of Breeze Corps., Inc. and has been moved to Newark, N. J., home of the parent company.

Freightliner Corp. of Portland, Ore., has moved into its new building at 1925 N. W. Quimby St. The company manufactures truck and trailer chassis, bodies and parts and now has a production of five trucks and six trailers per month.

Ford Motor Co. has purchased the former Republic-operated gun forging plant at Canton, Ohio, at a reported cost of $950,000. As soon as refitting can be completed, the 19-acre plant will provide additional forging facilities for Ford products.

Oltman-O'Neill Co., Detroit, is erecting a new 620-ft body plant, scheduled for completion on Nov. 1. It is expected that with the new facilities, body production can be increased to 10 per hour.

### PRIVATE CARRIERS OPPOSE CHANGES

The National Council of Private Motor Truck Owners, Inc. has expressed strenuous objections to certain of the proposed changes in Parts 1 through 6 of the ICC's Motor Carrier Safety Regulations. The Council in particular has taken exception to broadened application of present ICC regulations to local operations conducted wholly within municipalities, to the requirement for maintenance of driver logs in such operations and to the extension of reporting requirements under Part 4 of the regulations.

The Council has also gone on record with the U. S. Department of Labor as strongly opposed to any changes in the present definition of "outside salesman" as related to the Fair Labor Standards Act. It is reported that this definition may be made the subject of new public hearings and possible changes which might impair or destroy the present exemption of driver-salesmen.

### MATTISON TO SPEAK AT ATA

E. A. Mattison of San Francisco, executive vice-president of the Bank of America, will be the principal speaker at the closing day luncheon of the annual convention of American Trucking Associations, Inc. His connection with the now fabulous bank is told in the September *Reader's Digest* story, "The Bank That Youth Built."

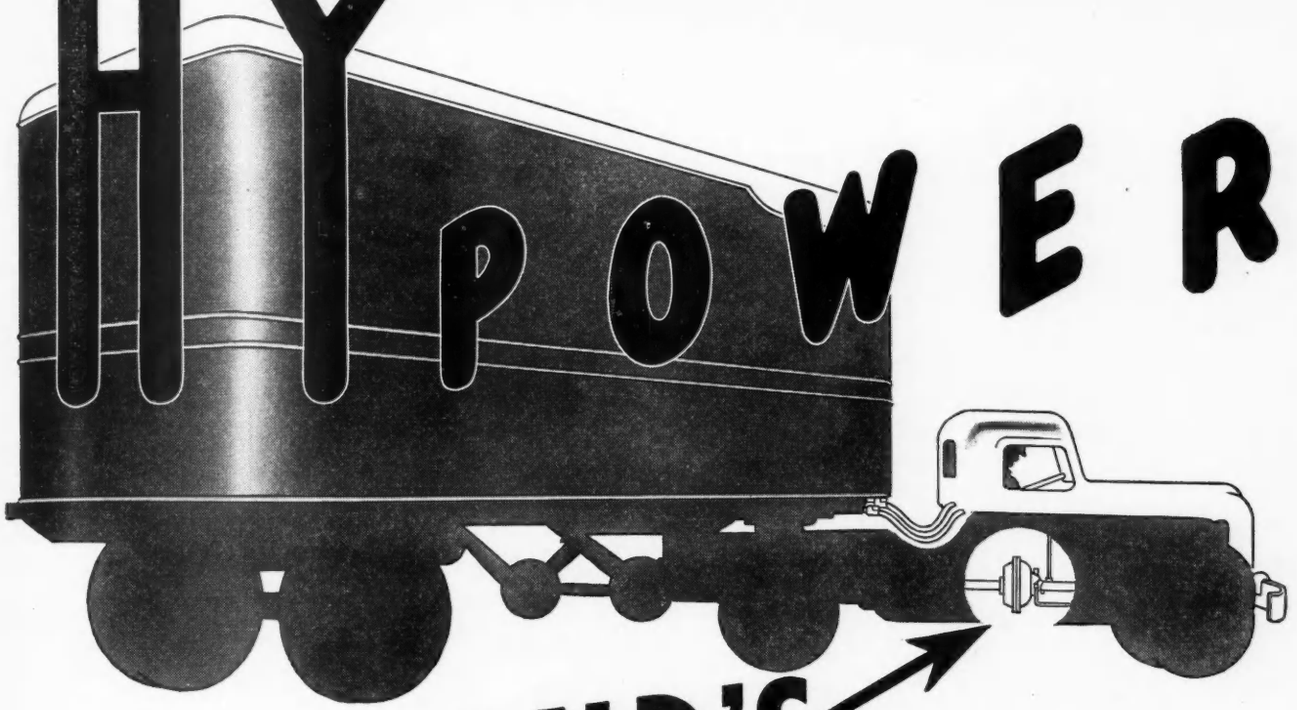
Convention dates at the Biltmore, Los Angeles, are Oct. 26 to 30 and all indications point to a record attendance according to Ray G. Atherton, ATA general manager. While annual and special committee meetings of the 10 conferences representing natural divisions of the trucking industry will consume a substantial part of the five-day program, numerous other events are being scheduled, including the National Rodeo to be staged in Victor McLaglen Stadium.

### Correction

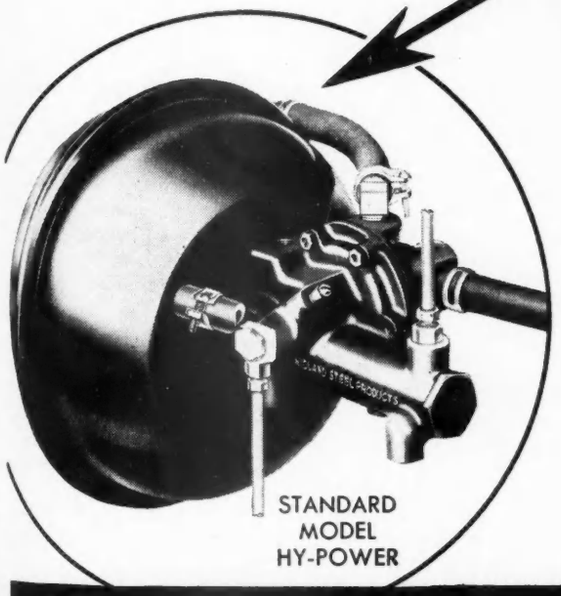
**To the many fleet operators who know him it will not be news that Lee Doty is chief engineer of the Piston Ring (American Hammered) Division of Koppers Co., Inc., Baltimore, Md. So it is to those who do not have the pleasure of his acquaintance that we call attention to an error on page 48 of the September issue where, over his discussion of an SAE paper on chrome plating, his company affiliation is incorrectly ascribed. Our apologies to Mr. Doty and American Hammered.**

(Turn to Page 102, Please)

# HY POWER



## MIDLAND'S Compact, Single Unit POWER BRAKE



STANDARD MODEL HY-POWER

HY-POWER is efficient and economical because of such features as these:

- Reduces brake effort — increases braking power.
- Instantaneous brake response.
- Brake "feel" gives driver perfect control.
- Self contained — sealed against all atmospheric conditions. No mud, water, dust or dirt can enter.
- Frictionless — never needs lubrication.
- No interference with the regular brake system.
- Easy to install — easy to service.
- Can be mounted at any desired location on chassis.

In the interests of economy and efficiency get complete facts about HY-POWER. Write today.

**THE MIDLAND STEEL PRODUCTS CO.**
6660 Mt. Elliott Ave. • Detroit 11, Mich.
*Export Dept:* 38 Pearl St., New York, N. Y.

# MIDLAND POWER BRAKES

# CCJ Newscast

(CONTINUED FROM PAGE 100)

## THREE LABOR SUITS PENDING

Three widely-separated damage suits against the Teamsters' Union are now in progress as the full impact of the Taft-Hartley Labor Relations Act becomes felt. Two of them are Federal law cases and are among the first five filed under the Act.

Most outstanding is the case filed by W. J. Dillner Transfer Co., Pittsburgh, Pa., against the Teamster Union for seven alledgedly unjustified or illegal work stoppages. Company seeks $485,000 damages.

The other two cases involve a $420,000 claim by 33 market and grocery stores in Aurora, Ill., for a reputed boycott and a $100,000 suit by Moskowitz Bros., Cincinnati junk dealers for an alleged secondary boycott.

## Domestic Motor Truck Factory Sales by Gross Vehicle Weight*

| | 5,000 & Less | 5,001-10,000 | 10,001-14,000 | 14,001-16,000 | 16,001-19,500 | 19,501-26,000 | Over 26,000 | Total |
|---|---|---|---|---|---|---|---|---|
| January | 25,578 | 11,103 | 17,361 | 15,746 | 3,259 | 2,313 | 2,074 | 77,434 |
| February | 26,051 | 13,076 | 19,170 | 18,150 | 2,316 | 2,579 | 1,934 | 83,276 |
| March | 27,268 | 16,852 | 19,358 | 20,232 | 3,062 | 3,254 | 2,056 | 92,082 |
| April | 24,487 | 15,978 | 18,953 | 14,885 | 3,582 | 3,360 | 2,270 | 83,515 |
| May | 23,532 | 14,091 | 17,474 | 13,028 | 2,577 | 2,950 | 2,044 | 75,696 |
| June | 21,995 | 10,911 | 16,320 | 16,462 | 2,928 | 2,837 | 2,350 | 73,803 |
| July | 22,684 | 12,903 | 16,471 | 19,294 | 2,305 | 3,069 | 1,777 | 78,503 |
| August | 20,227 | 9,759 | 13,977 | 15,592 | 2,216 | 2,968 | 1,666 | 66,405 |
| 8 Months | 191,822 | 104,673 | 139,084 | 133,389 | 22,245 | 23,330 | 16,171 | 630,714 |

* Automobile Manufacturers Association.

## 1947 Truck Trailer Production*

| | July | 7 Months |
|---|---|---|
| Vans: | | |
| Insulated and refrigerated | 168 | 1,335 |
| Furniture | 17 | 860 |
| All other closed top | 1,108 | 12,831 |
| Open top | 69 | 1,218 |
| Total Vans | 1,362 | 16,244 |
| Platforms: | | |
| With cattle and stake racks | 161 | 2,095 |
| With grain bodies | 49 | 932 |
| All other | 268 | 5,773 |
| Total Platform | 478 | 8,800 |
| Tanks: | | |
| Petroleum | 189 | 988 |
| All other | 13 | 707 |
| Total Tanks | 202 | 1,695 |
| Pole and Logging: | | |
| Single Axle | 263 | 3,100 |
| Tandem Axle | 99 | 1,139 |
| Total | 362 | 4,239 |
| Low-bed heavy haulers | 195 | 1,499 |
| Off-highway | 73 | 528 |
| Dump trailers | 28 | 509 |
| All other trailers | 79 | 934 |
| Total Trailers | 2,779 | 34,448 |
| Chassis for trailers | 174 | 1,941 |
| Total Trailers and Chassis | 2,953 | 36,389 |

*Data from Industry Division, Bureau of the Census.

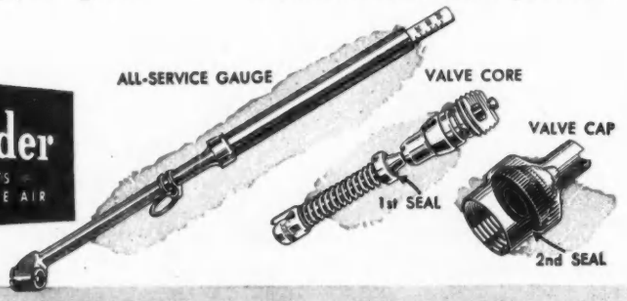

# Profits Start From the Ground Up

Flat tires on the road can upset many a schedule! Underinflation can waste up to half the life of your tires! Both cost you money! Why not cut these losses?

Take a look at your tire valves today. Are they air-tight? Have the cores been damaged? Is there a standard valve cap on every tire valve including your spare?

To prevent underinflation—to make tires last longer—it pays to inspect your tire valves regularly. Replace worn, damaged or missing parts and—be sure and carry a Schrader tire pressure gauge in every vehicle you operate. Watch your pressures and watch your operating costs go down! Your regular supplier has the Schrader Products you need.

Schrader
PRODUCTS
CONTROL THE AIR




A. SCHRADER'S SON, Division of Scovill Manufacturing Company, Incorporated, BROOKLYN 17, N. Y.
World's Largest Manufacturer of Tire Valves, Gauges and Accessories


## JULY TRUCKLOADINGS

The volume of freight transported by motor carriers in July decreased 1.3 per cent below June, but increased 9.1 per cent over July of last year, according to statistics compiled by the American Trucking Associations, Inc.

The ATA index figure, computed on the basis of the average monthly tonnage of the reporting carriers for the three-year period of 1938-1940 as representing 100, was 190.

## MACK SALES INSTITUTE

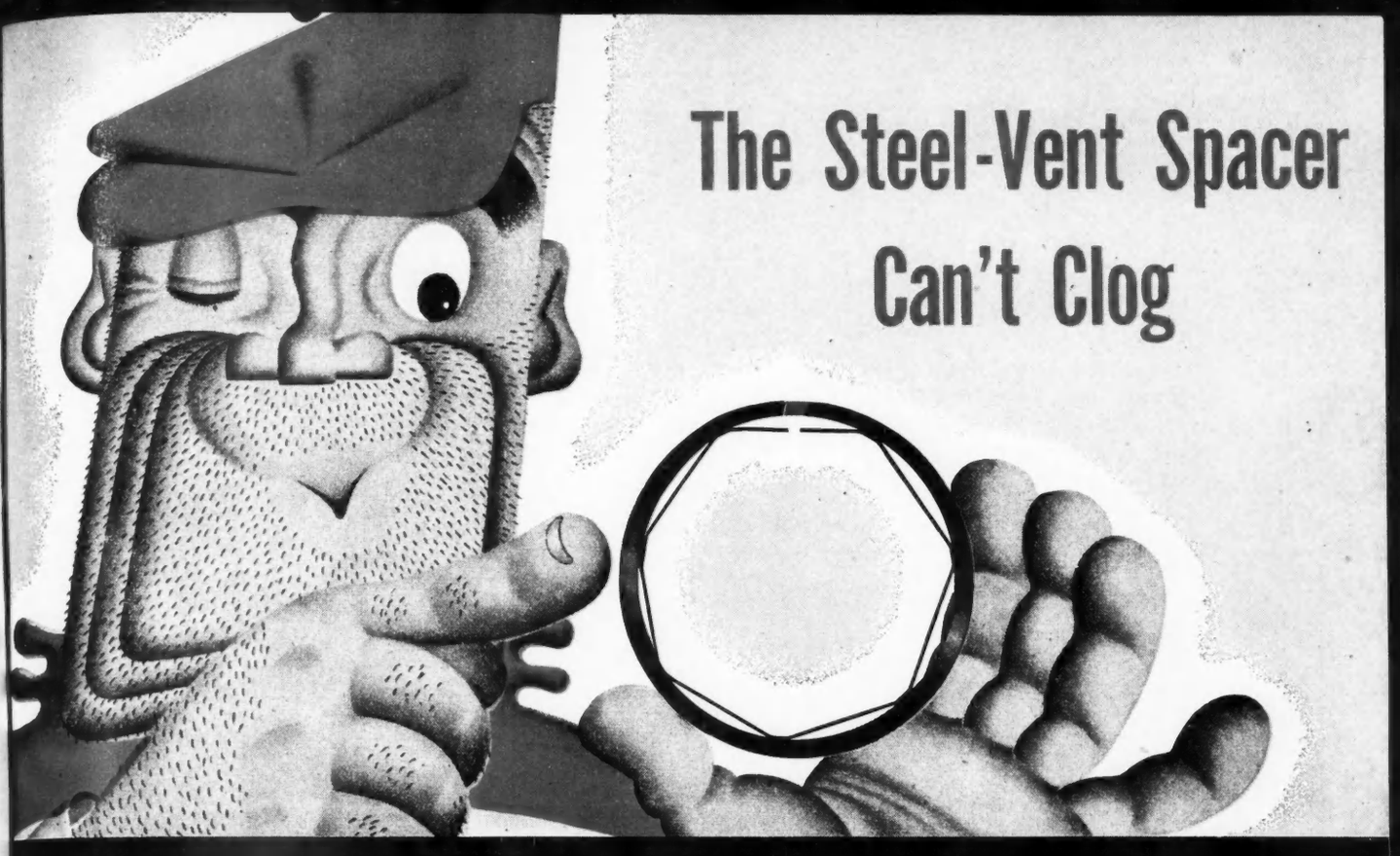
Following a recess of several months, the Mack Sales Institute resumed its courses in September under the direction of M. C. Horine, head of the Mack Truck Co.'s Sales Promotion Department.

Selected division, branch and dealer salesmen are being brought from all sections of the country for terms of 20 days each at the institute's headquarters in Mack's Allentown, Pa., plant. Successive terms will follow until between 300 and 400 will have had advantage of the intensive course.

## SUPERVISOR AVAILABLE

R. M. Leighton of Syracuse, N. Y., has resigned his position as Supervisor of Maintenance for the Western Region of Associated Transport, Inc. Interested operators, in need of a fleet superintendent, may reach him at 111 Wood Ave., Syracuse, N. Y.

(TURN TO PAGE 176, PLEASE)



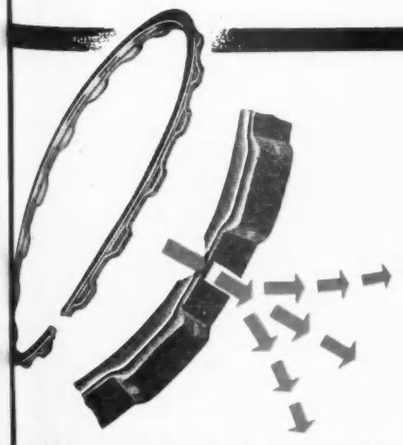
# The Steel-Vent Spacer Can't Clog

## NON-CLOGGING SPACER HELPS GIVE STEEL-VENT ITS LONG EFFICIENT LIFE

● Thousands of miles after other types of oil rings have clogged-up and ceased to function, Steel-Vents will still be delivering the same generous wall lubrication; still controlling the surplus oil and returning it to the crankcase.

Why? Because Steel-Vents can't clog. The spacer, with wide straight-through side-openings, operates against a moving segment. Thus sludge and carbon formations are constantly broken up. Clogging is impossible! Remember this, on your next job. It's equally important in rebored, resleeved or tapered-cylinder jobs.

HASTINGS MANUFACTURING COMPANY • HASTINGS, MICHIGAN
HASTINGS LTD., TORONTO



*Oil flows freely* through the wide vents of the spacer. The spacer "breathes" as it works against the moving segment, and automatically cleanses itself of sludge and carbon. *It can't clog!*


**HASTINGS**

STEEL-VENT PISTON RINGS

Generous Wall Lubrication
Always Under Control

## Two-Way Radio

(CONTINUED FROM PAGE 59)

tion with details on some of the earlier troubles.

### 55 Units in Service

ON Feb. 26, 1945, two-way FM radio equipment was installed on 52 cars and trucks. This followed a period of experimentation with radio on three vehicles; made a total of 55 units in use.

The system was placed in charge of J. P. Woodward, distribution service engineer, and W. R. McMillan, system superintendent distribution service. KUEC were the assigned call letters for the 250-watt central station transmitter operated remotely from three dispatching centers. All transmitters and receivers operate on an assigned center frequency of 39.66 megacycles.

The equipment selected was General Electric, but installation, arrangement, service and operating and maintenance data were collected by the Union Electric engineers.

### Central Transmitter

THE transmitter station was located centrally in respect to the area served, which was greater St. Louis. They selected a point in the southwestern part of the city at the highest elevation, 193 ft. above the zero benchmark located on the Mississippi river wharf. The station location proved ideal for transmitting and receiving and eliminated additional pickup receivers for talk-back from the mobile units.

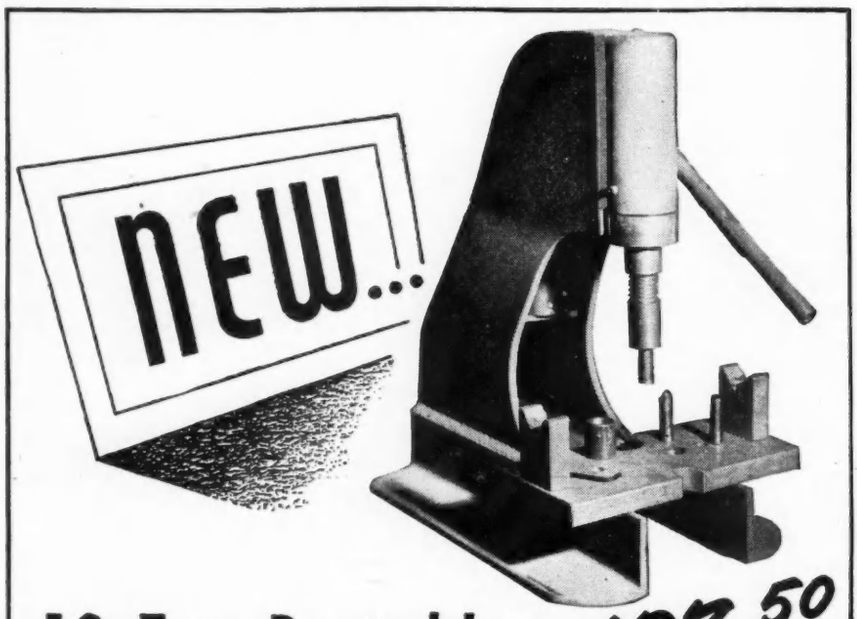
A one-half wave coaxial antenna fed from the 250-watt central transmitter through a 70-ohm concentric transmission line of 7/8-in. soft copper coaxial cable was mounted on top of a 200-ft. water tower. This made the antenna measure 393 ft. above the zero bench mark.

*In coupes, radio equipment is usually installed in rear deck, sometimes in compartment back of driver*

### Mobile Transmitters

MOBILE transmitters are rated at 30 watts output and deliver radio frequency energy to a one-fourth wave solid spring steel rod mounted on a double helical spring steel base. Both central transmitter and mobile transmitters are crystal controlled which in lay language means an automatic control of transmitting frequency or wavelength. This crystal is designed to maintain center frequency to within one per cent plus or minus of the assigned frequency allotted by the Federal Communications Commission. This is extremely important in any two-

(TURN TO PAGE 106, PLEASE)


10-Ton Portable ARBOR PRESS $127.50 F. O. B. FACTORY

*For the first time, a 10-ton portable arbor press, and at a low price every shop can afford.*

It's a RUGER

Can be used anyplace in the shop, set up on table or workbench convenient to the job. Easily picked up and moved around by one man as press weighs only 101 lbs.

Simple and practical . . . hydraulic principle eliminates all mechanical complications. Only two controls, pump lever and release valve. Hydraulic ram stroke, 6 5/8", with an additional 6" up-and-down mechanical adjustment, gives ample working range. Safety release prevents overload.

Price includes table, V-blocks and all attachments shown in illustration.

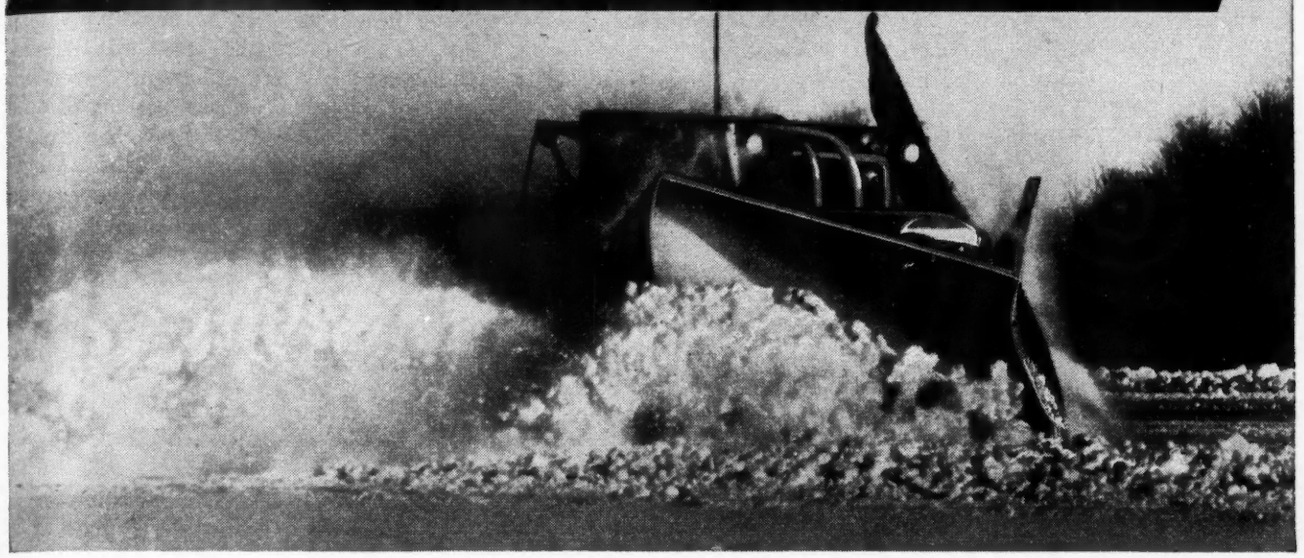
Mail your order to either office listed below. Shipment will be made through our nearest distributor. Or write for free photo bulletin and complete specifications.

RUGER Equipment Co., Inc.

408 Leader Bldg. Cleveland 14, Ohio

P.O. Box 3821 Portland 8, Ore.

# What makes the WALTER such an outstanding SNOW FIGHTER?



**1. TRACTION** — the most vital requirement to enable a truck to navigate snow, ice and slippery surfaces, without stalling or side-slipping. Only Walter Snow Fighters provide 100% traction at all times—because only Walters have the patented automatic lock differentials to concentrate power on the wheels having traction at all times. This provides steady tractive power, prevents wheel-spinning and stalling.

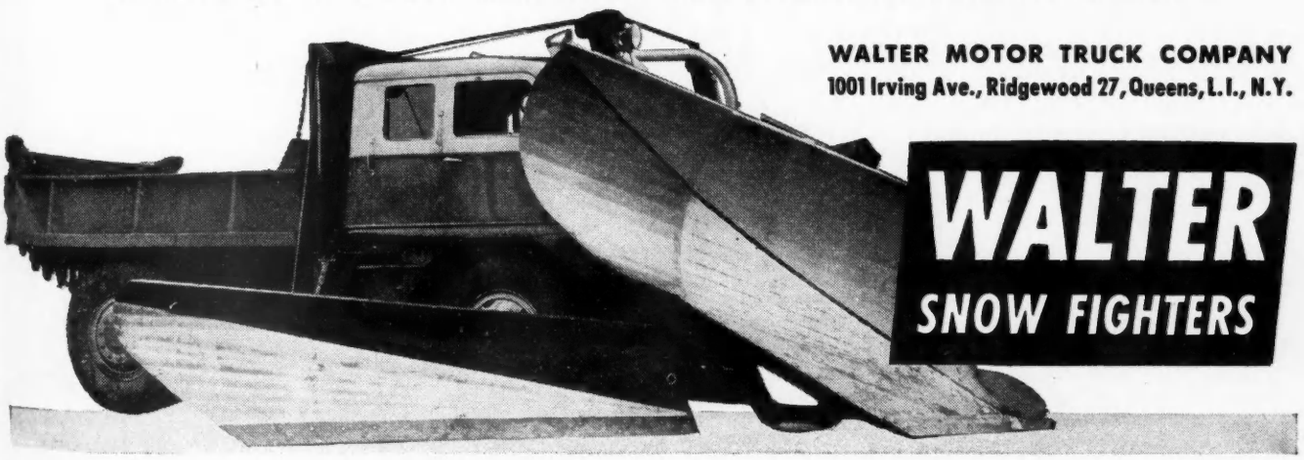
**2. POWER** This means more than horsepower—it means tractive power or driving force. Walter Snow Fighters not only have powerful motors (150-350 hp.) but every horsepower is utilized by the exclusive Walter 4-Point Positive Drive. You can mount the biggest plows—tackle the biggest drifts.

**3. SPEED** Not merely rated highway speed—but sustained speed while operating in snow and ice and on slippery surfaces, clearing 2 and 3 feet of snow and blasting through deep drifts. Because of the combination of high traction and power, Walter Snow Fighters travel at speeds of 20-30 mph., throw snow far off the road, clear more miles per hour, make widening easier.

**4. SPECIAL DESIGN** Not only the Walter drive system — but the entire unit is scientifically designed and ruggedly built for snow removal. This includes its plows, controls, hydraulic equipment, cab, lights and every detail that provides efficient clearing and easy, safe handling.

***FOR MORE DETAILS — see your nearest Walter distributor or write us for illustrated literature.***

**WALTER MOTOR TRUCK COMPANY**
**1001 Irving Ave., Ridgewood 27, Queens, L.I., N.Y.**



## Two-Way Radio

(CONTINUED FROM PAGE 104)

way radio system for two reasons. First, any appreciable variation will cause interference with other stations, and at the same time reduce the usable signal in your own system. Second reason is that unless the transmitter adheres to specified variation limits, the FCC will bar it from the air.

Almost every conceivable type of vehicle is represented in the installation at Union Electric which makes it a good pilot operation for others to study. Among the vehicles originally equipped are line trouble cars, two-door sedans, coupes, sedan panel deliveries, half-ton panels, a special-body truck, radio maintenance cars, line construction trucks, a cable fault location truck and supervisory cars.

All are affected by the problem of where to install the equipment. In the majority of passenger cars the radios were placed in rear trunk compartment, although in some coupes they were installed behind the driver's seat. Radios in the sedan deliveries and half-ton panels were installed on the deck behind the seats with the exception of four new cars in which a special compartment was provided. Here again it is possible, once a fleet has installed two-way radio, to buy bodies or have them made with special locations for the equipment. In all the heavy trucks, compartments formerly used for tools and fittings were converted for the radio equipment use without trouble.

### Heavy-Duty Equipment

STANDARD vehicle batteries and generators will usually either have to be removed or supported by additional equipment. Union Electric removed standard batteries and generators and replaced them with 40-amp. heavy-duty generators, associated voltage regulators and 170 amp-hour heavy duty 6-volt batteries. In this connection it should be explained that some transmitters and receivers are designed for 12-volt operation and that developments may be expected in the use of the high-output automotive generator of the alternating current type.

At Union Electric they deemed it necessary to reinforce their electrical systems because during trouble work at night they usually have a heavy electrical load from using headlights, spotlights, trouble lights, warning lights and sometimes an electric heater.

The Union Electric Company's two-way radios use nine amps in standby operation and 36 amps when transmitting.

### 30-Mile Limit

SATISFACTORY operation has been obtained on the equipment up to 30 miles. Car-to-car communication is little used, but can be used from two to 20 miles but its effectiveness depends largely on the obstacles and ground between the two communicating cars.

You may still expect to encounter wild waves under freak conditions. A laundry fleet in Los Angeles which has installed two-way radio in all its trucks happens to have the same wavelength (37,900 kilocycles) as the Charleston, W. Va.,

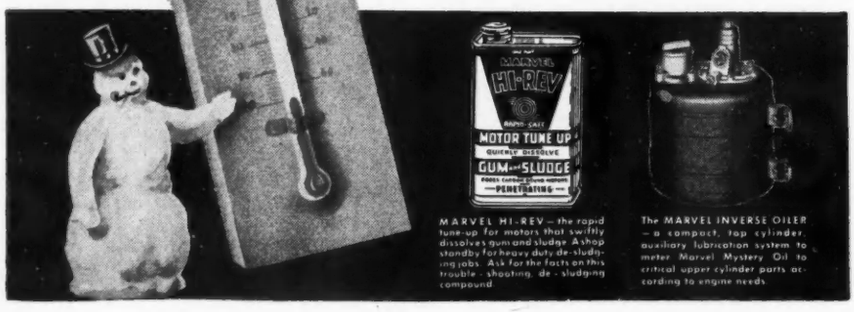
(TURN TO PAGE 108, PLEASE)


FROM 700° ABOVE TO 70° BELOW
THE THERMOMETER READS
MARVEL
ALL THE WAY

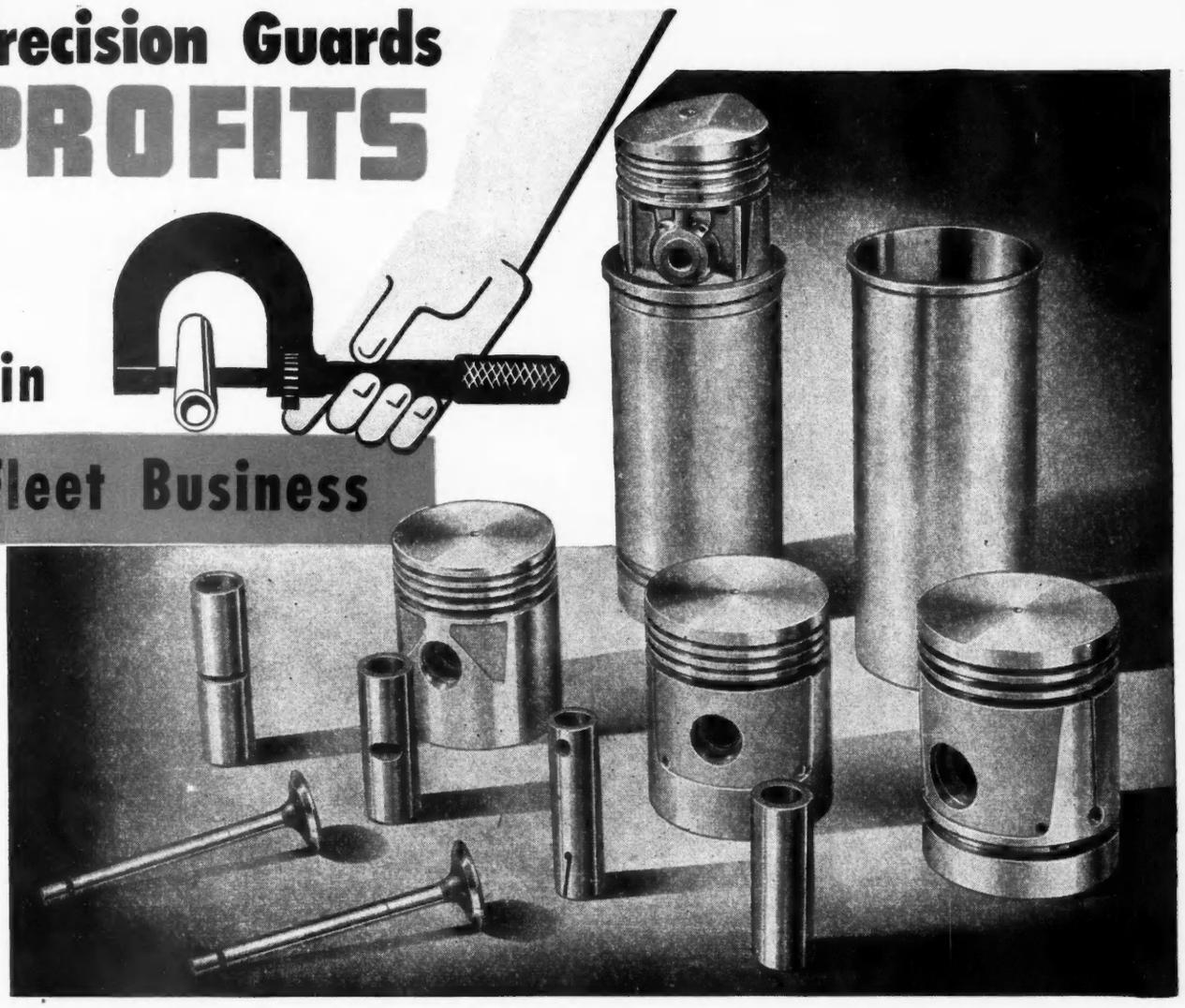

At a sizzling 700° which easily may be reached in your motor's upper cylinder zones, MARVEL closes heat-thinned gaps in vital lubrication protection. Added to your lubricating oil, it spreads its tough, heat-resisting film on bearings and cylinder walls, shielding these all-important parts from excessive wear. From 150° to 250°, normal operating range, MARVEL is right on the job, re-inforcing *every* lubricant to which it is added.

In oil and gasoline as well, MARVEL goes to work cleaning pump screens and preventing the formation of power-killing, fuel-wasting deposits in fleet motors. When the mercury dips to a freezing 32° and below, as it will on many a day this winter, MARVEL rises to the occasion with low temperature flow that gives you quicker starts, less battery drain, easier shifting and easier steering. *ALL* your lube oils and gear greases will need MARVEL soon. At an astounding 70° below zero this remarkable additive still flows! That's the kind of dependable protection against cold weather driving difficulties it will *pay you* to have this winter! Emerol Manufacturing Co., Inc., 242 West 69th St., New York 23, N. Y.

MARVEL
MYSTERY OIL



# Precision Guards PROFITS in Fleet Business



## For *precision* in replacement parts . . . get PERMITE

Three factors are essential to your profits: (1) payloads; (2) economical operation; (3) low maintenance cost.

Every Permite Piston, Valve or other Permite Replacement Part used in servicing your fleet helps save money on operation costs and maintenance costs.

Precision-made Permite Parts fit right for easy installation. They perform right because of their inbuilt quality. Properly selected alloys, correct design, and advanced production techniques give Permite Parts the ability to withstand the steady punishment of toughest hauling conditions.

To keep your equipment rolling — economically, profitably — replace with precision-made Permite Parts. See your Permite Jobber for your requirements.

**ALUMINUM INDUSTRIES, Inc.**
**Cincinnati 25, Ohio**

**PERMITE**

**REPLACEMENT PARTS**

| | | | | | |
|---|---|---|---|---|---|
| PISTONS | VALVE GUIDES | WATER PUMPS | CYLINDER SLEEVES AND ASSEMBLIES | TIE-ROD ENDS | MUFFLERS AND CLAMPS |
| PISTON PINS | VALVE STEM KEYS | WATER PUMP REPAIR KITS | | BOLT SETS | |
| VALVES | VALVE SPRINGS | | SPRING SHACKLES | BUSHINGS | TAIL PIPES |



*Use postage-paid card inserted on page 61 for free information on advertised products*

## Two-Way Radio

(CONTINUED FROM PAGE 106)

police, and the capricious waves jumped the two thousand miles of desert, mountains and sage brush. Charleston police were nonplussed when their radio speakers commanded them to pick up a load of diapers from the Smith home, and even more disconcerted when they couldn't find the Los Angeles address in Charleston. These are freaks of nature, however, and are seldom causes for annoyance.

### 1200 Calls A Month

DURING the first nine months of operation Union Electric completed 11,000 two-way radio messages, an average of 1200 a month, with a high month of 2000 messages. There were 1900 incompleted messages but these were due mostly to men being away from their cars when called rather than mechanical or natural upsets. The high month of 2000 messages was in June, 1945, and was the result of rain and high wind during that month necessitating more line trouble calls and a greater use of the radio equipment.

### Two-Man Maintenance Team

DAY-BY-DAY maintenance of the equipment was placed in the hands of two men who hold second class radiotelephone operator's licenses. They work under the jurisdiction of the distribution service engineer. It takes 85 to 95 per cent of their time to maintain the system on the PM basis set up by the two engineers.

Each month all the cars are inspected by these two men with relation to the radio equipment. Equipment is tested, frequency measurements are taken and alignment of the mobile transmitters is checked. Once every six to eight months the dynamotors are inspected and greased. Receivers, it proved out, required little attention.

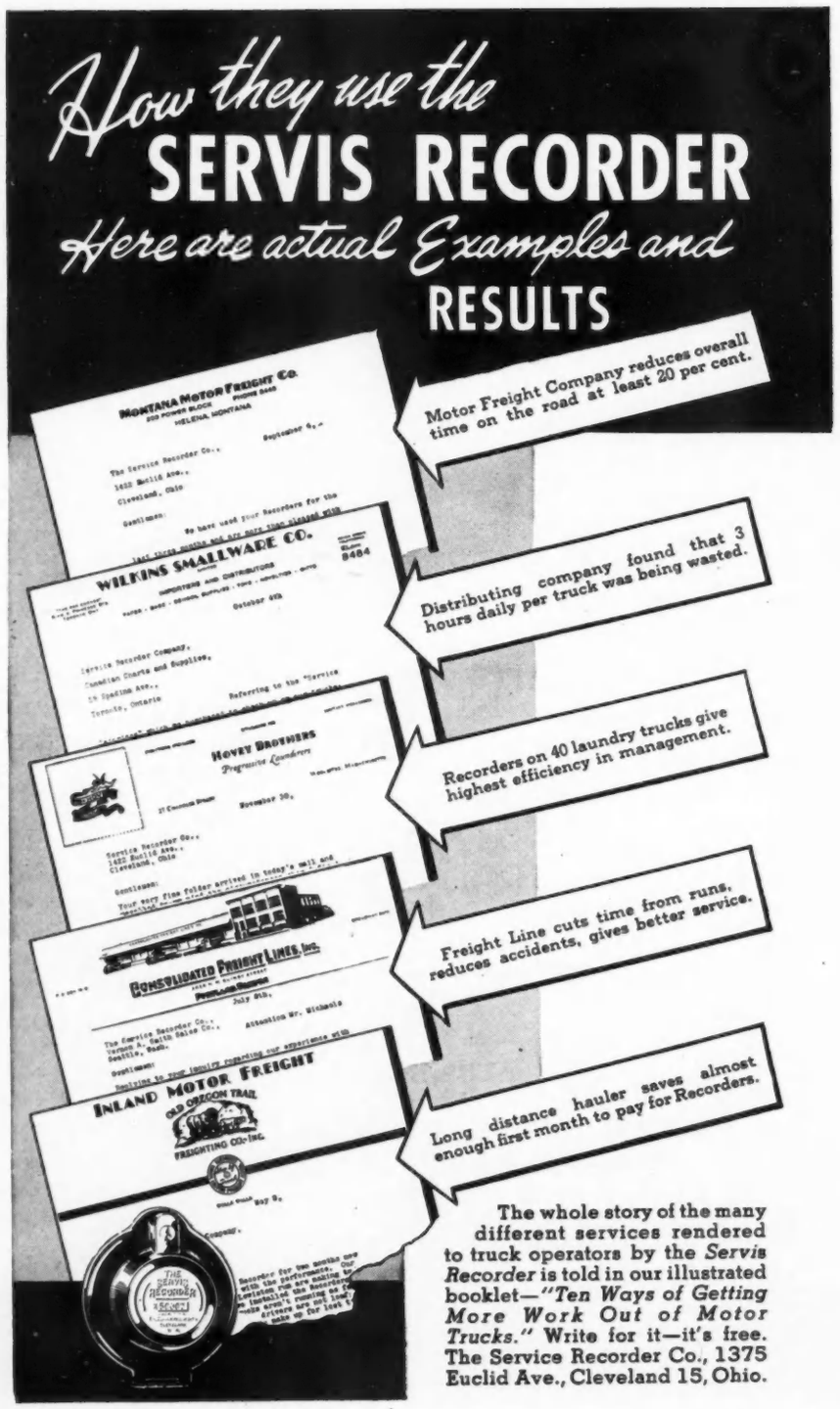
Complete test and maintenance facilities were provided at the central transmitter station, consisting of a transmitter room with work bench and test instruments and an adjoining garage for work on the mobile units. Most of the maintenance work is done there, although some of the checking is done at company garages where vehicles are kept, by using a portable frequency monitor.

### Meticulous Records Pay Off

IT should be borne in mind that during the first nine months of operation the two engineers kept meticulous records of every phase of the operation from which detailed cost figures could be obtained. These have been used to correct weakness in equipment, to improve using habits of the system, and to improve maintenance.

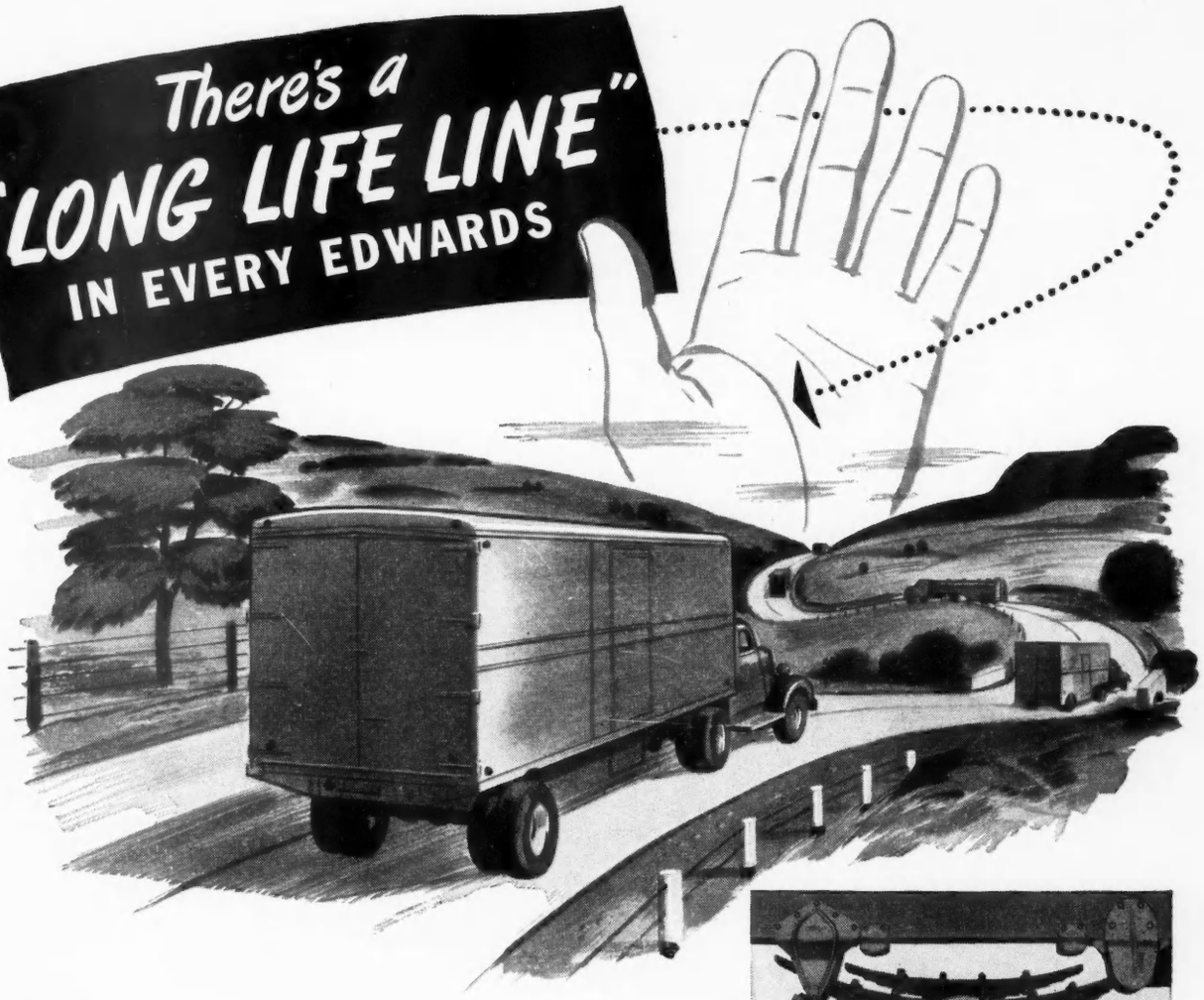
Mr. Woodward and W. R. McMillan characterize the following tabulation of equipment trouble as obsolete, mainly because they have corrected the conditions and passed on to greener fields. This may be obsolete to them, while to a man in swaddling radio clothes it may be of pristine newness. It is not likely that the same set of circumstances will ever happen to another installation, the law of averages being what

(TURN TO PAGE 110, PLEASE)

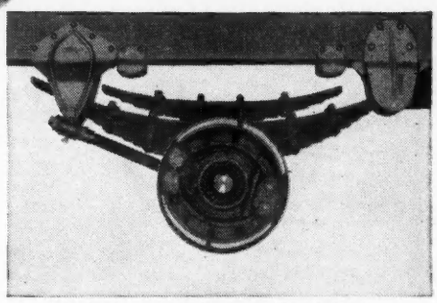

**The whole story of the many different services rendered to truck operators by the *Servis Recorder* is told in our illustrated booklet—*"Ten Ways of Getting More Work Out of Motor Trucks."* Write for it—it's free. The Service Recorder Co., 1375 Euclid Ave., Cleveland 15, Ohio.**

# There's a "LONG LIFE LINE" IN EVERY EDWARDS

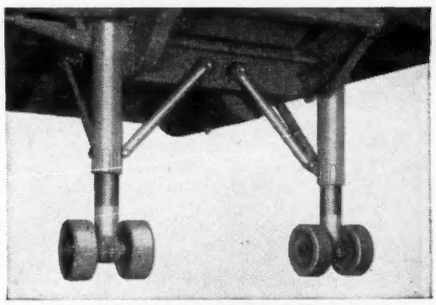


EDWARDS TRAILERS are famous for their long life . . . durability and low maintenance costs. This reputation stems from Edwards many years' experience in building trailers . . . the sound engineering principles incorporated in the design of every Edwards Model . . . the tested materials and skilled workmanship that go into every unit.

When you order your new units — order Edwards. They pay for themselves in a hurry, for every load is a profitable load. Write for literature illustrating the many models and outstanding features.



**BRAKES — RADIUS RODS — SPRINGS** Powerful sure-stop, mountain type brakes. Adjustable radius rods. Trouble-free slip-type springs give easier riding under all road conditions.



**DUAL WHEEL LANDING GEAR** New vertical type Extra strong, easily operated, and rigidly braced. Worm and gears enclosed for protection. Dual wheels on each leg give firmer support.

# EDWARDS


EDWARDS IRON WORKS, INC., SOUTH BEND, INDIANA

## Two-Way Radio

(CONTINUED FROM PAGE 108)

it is, but it does teach an important fact—that all troubles should be tabulated for the first year of operation. Only by tabulation can the operation be smoothed out and proper economies affected, not to mention the improvement in the use of the equipment.

Here's what happened during the first ten months of operation:

Fifty-five microphone cable shields broken loose at the Amphenol plug connector; 26 on-and-off switches burned open in control head; 18 control fuses blown due to poor contact in fuse holder; 15 antenna cable plug connector shields broken lose; 14 flexible steel antenna rods broken; 34 miscellaneous accessories defects; 23 cases of defects in mobile transmitter and receiver chassis; 35 tubes replaced in mobile transmitters; 32 tubes replaced in mobile receivers; 12 tubes replaced in central transmitter and remote control units; a total of 264 repaired items listed for the ten months.

Five heavy line trucks equipped with radio gave them some trouble because they accumulated such small daily mileage they couldn't keep the batteries charged. Even the heavy-duty batteries and generators failed to do the job. Since it was impractical to run more miles with heavy equipment, reroute or otherwise change the habits of these large trucks, the most economical solution was a periodical change in batteries with freshly charged ones from the company shop.

Antenna installations on these large trucks took a beating, too. It was necessary to mount the antennas high so they would be in the clear and on three such trucks they were mounted on the cab roof. This made them 16 feet above the street and this height would not clear all tree limbs, bridges, underpasses and other obstacles, resulting in many broken antenna rods. They moved them to the side of the truck, which lowered their overall height by three feet.

At the same time a careful check was made of the use of radio by these heavy units and it was disclosed that their average number of messages was six per month and it was then decided to give the entire setup a careful appraisal and study.

### Interference Can Be Licked

CENTRAL transmitter operation was at first affected by rain, electrical storms and snow, resulting at times in flashovers at the switching relay and a loss in receiver sensitivity at the central station of as much as 50 to 75 per cent. The manufacturer, cooperating with Union Electric engineers, located this trouble in the central station antenna, which was redesigned.

You may expect considerable interference in your radio installation but you can also get much competent help. The Federal Communications Commission has monitoring officers, who listen to your transmission and keep you on the "beam" and they also assist in correcting man-made interference.

Notwithstanding the much-heralded quietness of the FM bands, it is susceptible to interferences. It is

(TURN TO PAGE 113, PLEASE)



"Easy Does It" with Safety 5th Wheels! Easy coupling. Easy uncoupling. Ease of mind, *always.* It's easy to tell when these wheels are locked. Owners find them *easy* on their pocketbooks.

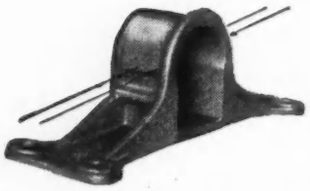
SIMPLICITY YOU'LL LIKE

Safety 5th Wheels are easy to maintain. Simple shimming—*without* removing wheel—controls end-play or slack. Heavy trunnion bearings end bracket troubles. Patented jaw and lock design absolutely *prevents* accidental uncoupling. It's easy to see how 40 years of railroad coupler experience has made these better 5th wheels *really* safe.

SERVICE WHEREVER YOU GO

And Safety 5th Wheels are easy to buy. There are dealers and distributors on all major truck routes from coast to coast—*everywhere* you are; everywhere you *go.* Find out today how easily Safety 5th Wheels can save *you* time and money, work and worry. Automotive Division, American Steel Foundries, 400 N. Michigan Ave., Chicago 11, Illinois.

The new Series 400-C. Dealers and distributors wherever you go.



Sockets on the plate fit well down over the trunnions so that tractor *pull* is transmitted in a *straight line.* Plate won't "lift" under power or braking.

A·S·F Safety 5th WHEEL

## Two-Way Radio

(CONTINUED FROM PAGE 110)

free from atmospheric static. Union Electric with the help of FCC monitoring officers located several interfering diathermy machines which were adjusted so the noise was off the Union Electric frequency. One machine located only a quarter of a mile away from the central transmission station hopelessly jammed transmission for twenty to thirty minutes daily until it was adjusted.

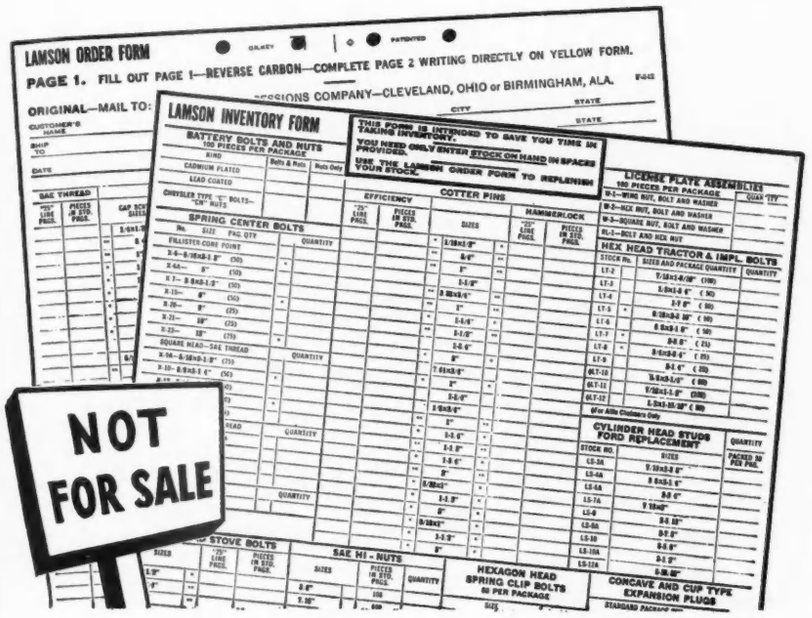
Another problem to be considered and worked out by each fleet owner is the approach to the saturation point. That is, where a large number of units are equipped and a large number of messages are handled, it approaches a point where all of them seem to want to talk at once. These are things that need to be considered broadly but which can always be worked out for each individual fleet.

Most new installations will probably find themselves following the lead of our established radio stations, who maintain a transmitter at their central location and the antenna and station in some outlying suburb. This plan works equally well for the fleet operator. He can have his transmission equipment remotely controlled from the dispatcher's office, main office or maintenance garage. This permits locating the actual transmitter in a more effective place where the noise level is low and the maximum coverage is obtained.

From the results obtained by Union Electric and other fleetmen using two-way radios, it appears that the driver is now on the vanishing end of a period which requires a nickel, a place to park and a phone booth to call the office. When he stops in the future it will have to be for coffee.

*END*

*(Please resume your reading on P. 60)*


**. . . But for Saving Time!**

Tired of "paper work"? Does writing orders and taking inventory get you down? Well, here are a couple of "helping hands" from Lamson that will greatly simplify your job.

These forms have been especially prepared to take 90% of the work out of the tasks of taking inventory and writing up orders. All you do is write in quantities desired (or in stock) and sign your name. We've even marked fast-moving items with asterisks so you can spot them easier.

Write to us for Lamson simplified Inventory and Order Forms. They're free, of course—another Lamson Service for our automotive customers.

**THE LAMSON & SESSIONS CO. • 1971 W. 85th St. • Cleveland 2, Ohio**

*Plants at Cleveland and Kent, Ohio • Chicago • Birmingham*

AUTOMOTIVE FASTENERS

**LAMSON & SESSIONS**

*Ask your distributor for the Lamson Line*


## Quiz Answers

**CCJ Quiz on P. 80**

1. a. Less than 1 ton. A nationwide truck inventory made by the Public Roads Administration, covering three-fourths of the trucks in the U. S., showed 42½% of all our trucks had a manufacturer's rating of less than a ton.

2. b. The same survey mentioned above showed 34% of truck bodies classified as "pick-ups." Stake bodies were second with almost 24% and panel bodies third with a little more than 15%.

3. b. About two-thirds of all tank type vehicles are designed for hauling gasoline.

4. a. Considerably less than 1% . . . in fact just a little more than 1/10 of 1%.

5. b. There were 15,819 cab-over-engine models built, roughly 1 out of 60.

6. d. Data compiled by the Office of Defense Transportation toward the end of the war showed that more than one third of all trucks were engaged in agricultural pursuits.

7. b. Intercity common carriers account for 30% of all trailers and semitrailers.

8. c. Manufacturing industries use almost half of all trucks equipped with refrigerated bodies.

9. a. Ford. As of July, 1946, there were more than a million and a half Ford trucks registered throughout the country. Chevrolet wasn't far behind.

10. b. The average age of trucks in this country would be about 8 years.

*(Please resume your reading on P. 83)*

## Division Point Terminal

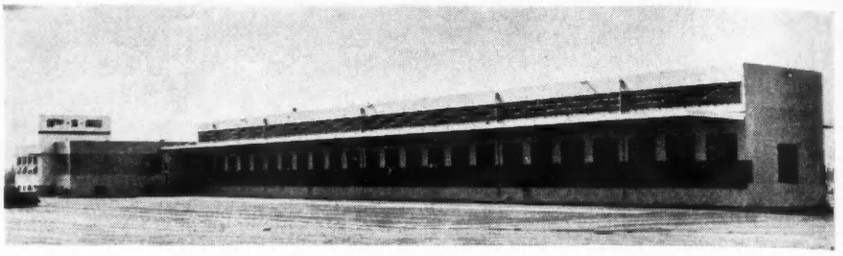
(CONTINUED FROM PAGE 58)

are now located at Salt Lake City, Utah.

Two additional features of note are the roomy office space provided (left side of drawing) and the large basement area under the office section connecting with the shop area by ramp. Virtually unlimited, yet easily accessible, parts storage space is thereby provided.

*END*

*(Please resume your reading on P. 59)*



***Close-up of terminal building shows arrangement of its loading facilities***

### SUPPORT FOR MAIN ROADS

A recommendation that road construction funds be spent for the improvement of America's main arterial highways instead of on secondary roads was made here at a recent meeting of the United States Associates Highway Transport Committee. This is in sharp contrast to the familiar political thinking along the lines of "Let's get the farmer out of the mud."

Pyke Johnson, president of the Automotive Safety Foundation, elaborated on the committee's statement by pointing out that studies in the past indicate that 86 per cent of the traffic needs of the U. S. have been met by improving 23 per cent of the highways.

### TRUCKLOADING HOLD LEVEL

The volume of freight transported by motor carriers in June held virtually even with the figures for May, declining one-tenth of one per cent, but increased 12.7 per cent over June of last year, according to statistics compiled by the ATA. The ATA index figure, computed on the basis of the average monthly tonnage of the reporting carriers for the three-year period of 1938-1940 as representing 100, was 196.



**TRIPLE VALUE Motor Oil**

**for hard-working gasoline-driven fleets**

Now . . . AMALIE gives you a superior fleet oil for cleaner engines and smoother, trouble-free performance under toughest operating conditions. It's AMALIE E-D (Extra Duty). It has the naturally greater oiliness of all AMALIE oils — straight-run refined from premium Pennsylvania crudes — plus *extra-duty* efficiency resulting from the addition of special war-developed ingredients. Fights carbon, sludge and varnish. Prevents bearing corrosion. Ends ring sticking. Guards vital parts against wear. Prolongs engine and oil filter life. Raises gas and oil mileage. It's *stabilized!* So keep engines cleaner, cut down repair layups — with AMALIE E-D.

**FOR DIESELS:** Specify AMALIE H-D, the *complete* heavy-duty oil.

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SEE YOUR AMALIE DISTRIBUTOR, OR WRITE DEPT. J

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*Refineries:* Petrolia and Franklin, Pa.

*Plant:* Nutley, N. J.

*In the Southwest:* Sonneborn Bros., Dallas 1, Texas



**WHO IS IT?**

AS PRESIDENT OF HIS COMPANY THIS MAN IS OFTEN REFERRED TO AS "MR. U.S. RUBBER CO." AMONG HIS ACHIEVEMENTS IN YOUNGER DAYS WAS THE SWIMMING OF THE GOLDEN GATE. HE IS...

- ☐ JOHN GOODALL
- ☐ HARVEY FIRESTONE
- ☐ F. B. DAVIS, JR.
- ☐ HERBERT E. SMITH

*Answer on P. 116*

# "Nothing to worry about . . . HIGHWAYS handle easy"

1917–1947 HIGHWAY TRAILERS 30th Anniversary

Highway Trailers are engineered for easy handling in tight spots. It's part of the know-how acquired by Highway Trailer engineers in over a quarter-century of successful experience. It's one of the reasons why Highways rate high with the men who own them—and the men who operate them.

Whenever your fleet needs new trailers, it will pay you to invest in Highways. You're sure of all the rugged honesty of Highway engineering, whether you choose Highway "Clippers" or "Freightmasters," platform-type, tank, grain, or stock-hauling jobs, or the famous Highway Warehouseman's Van. Highway controls quality because ours is a *manufacturing* rather than merely an assembling operation. We even have our own foundry, forge, and machine shops.

Write today for all the facts on the particular type of Highway Trailers your operation requires. We'll be glad to furnish specifications to prove why it pays to let your next trailers be Highways.

**HIGHWAY TRAILER COMPANY**

*General Offices:* Edgerton, Wisconsin
*Factories at:* Edgerton and Stoughton, Wisconsin

Commercial Truck Trailers • Earth Boring Machines
Winches and other Public Utility Equipment


**HIGHWAY** AMERICA'S QUALITY **TRAILERS**

## Shotpeening

(CONTINUED FROM PAGE 47)

tests have been compiled and some of them will be presented briefly here. Fig. 3, at right, shows the test results of the valve rocker arms used in the General Motors truck engine. It can be seen that the four parts which were not peened had a life ranging from 17 to 57 hours while the 12 peened ones were tested for 140 hours at which time one rocker arm failed. The engine which was used for this test was run at a speed of 4000 rpm.

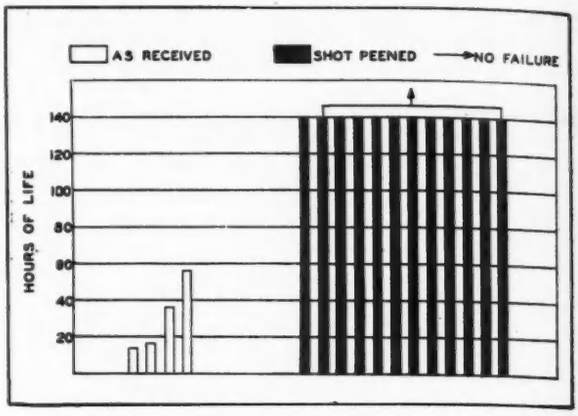



*Fig. 3. Comparison of peened and unpeened valve rocker arms from GMC truck engine submitted to 4000-rpm overspeed test. Only one shot-peened arm failed after 140 hours*

### Connecting Rod Test

THE test results on the fork type connecting rods for the Rolls Royce engine built by Packard Motor Car Co., are shown in Fig. 1. This chart is especially interesting because it shows that shotpeening can save many man and machine hours by eliminating costly grinding and polishing operations. It is indicated that the rods which were shotpeened after rough finish outlasted many times over those which were polished.

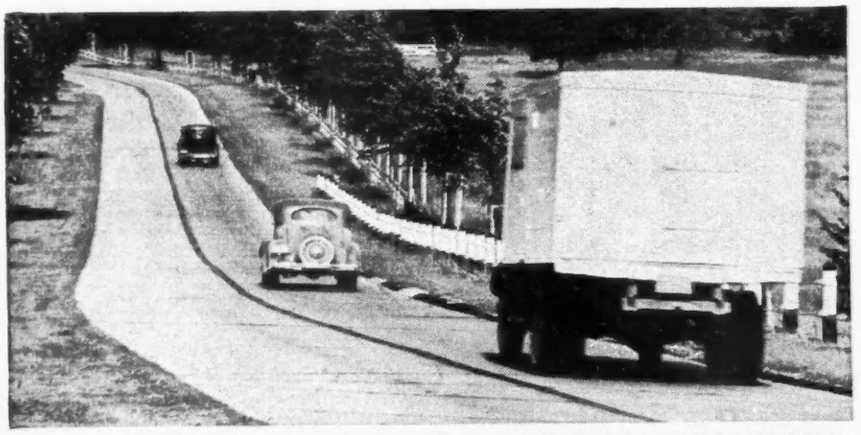
### Transmission Gear Test

ANOTHER illustration of how shotpeening can save money is proven in figure 2. This shows tests on carburized low speed sliding gears of a Fuller transmission. The two groups of bars on the left show the life comparison of unpeened and shotpeened gears made of SAE 4620 steel. The group on the right shows that the fatigue life of carburized shotpeened gears made of SAE 1020 steel is at least as high as that of the unpeened gears made of alloy steel.

### Coil Spring Test

AS already mentioned, springs are ideal parts for shotpeening. An interesting test made on coil springs

(TURN TO PAGE 118, PLEASE)

PUT THEM BACK TO WORK FASTER

*Keep them Rolling Longer with...* Hypressure Jenny STEAM CLEANER

When mechanics on repair jobs are forced to hand-wipe dirt and grease from tools and equipment their work is harder, more dangerous, slower. Actual time studies prove that Hypressure Jenny steam cleaning *before* repairs speeds jobs as much as 40%. That means your trucks go back to work faster. It means more road time . . . more profits.

Hypressure Jenny will save you time and money in scores of other ways too . . . by cleaning garage and shop equipment . . . tools . . . lifts . . . grease pits . . . runways . . . floors . . . walls . . . windows, etc., 10 times faster and better than by hand methods.

For full particulars and the address of your nearest Hypressure Jenny dealer, write today.

HYPRESSURE JENNY DIVISION

HOMESTEAD VALVE MANUFACTURING CO. • P.O. BOX 90 • CORAOPOLIS, PA.


## ● WHO IS IT?

*ANSWER . . . (To Question on P. 114)*

**Herbert E. Smith, first president of U. S. Rubber to rise from the ranks, made a name for himself at the University of California as a swimmer, crew man and middleweight boxer.**

*(Another Cartoon Quiz is on P. 118)*


# Spicer

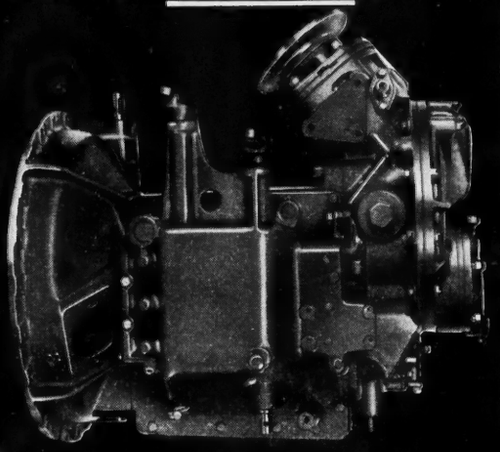
## —picked by the Automotive Men who know!

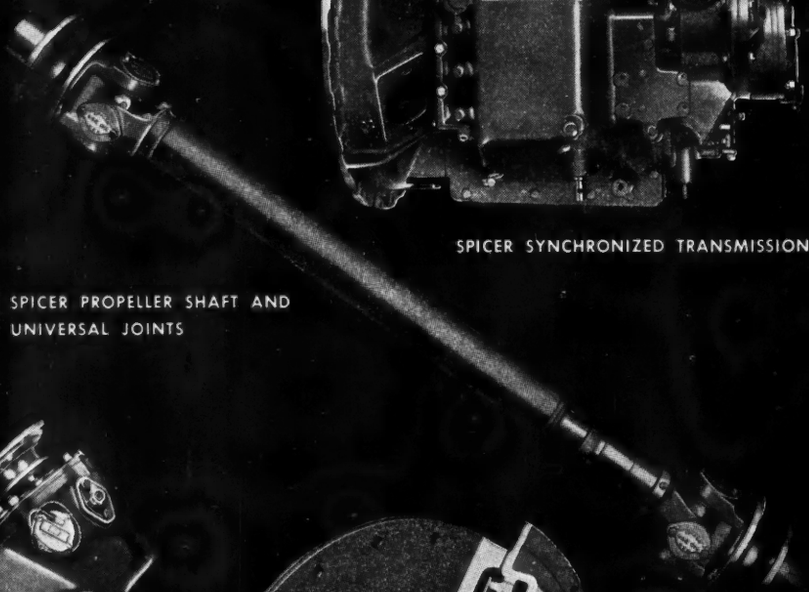
**Spicer Power Transmission Equipment is used in a large majority of the *trucks* being manufactured in America.**

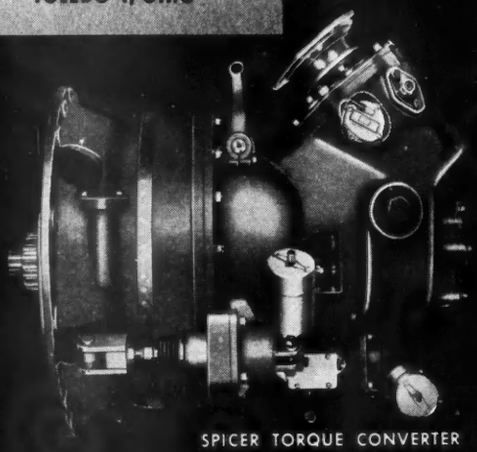
**Spicer Power Transmission Equipment is used in a large majority of the *busses* being manufactured in America.**

**Spicer Power Transmission Equipment is used in a large proportion of the *passenger cars* being manufactured in America.**

**SPICER MANUFACTURING**
*Division of Dana Corporation*
TOLEDO 1, OHIO


SPICER SYNCHRONIZED TRANSMISSION


SPICER PROPELLER SHAFT AND UNIVERSAL JOINTS


SPICER TORQUE CONVERTER


SPICER *BROWN-LIPE* CLUTCH

43 YEARS OF Spicer SERVICE

TRANSMISSIONS · TORQUE CONVERTERS · PASSENGER CAR AXLES · CLUTCHES · PARISH FRAMES · STAMPINGS · UNIVERSAL JOINTS · SPICER "BROWN LIPE" GEAR BOXES · RAILWAY GENERATOR DRIVES

## Shotpeening

(CONTINUED FROM PAGE 116)

showed that shotpeened production springs with a hardness of 52 to 53 Rockwell C. far outlasted other springs which were not drawn but left at a hardness of 61 to 63 Rockwell C. Those which were not peened broke very rapidly because they were too brittle.

With regard to the effects of shotpeening real axle shafts, we refer to a number of tests completed by O. J. Horger of the Timken Roller Bearing Co. and C. H. Lipson of the Chrysler Corp. They report that shotpeening of straightened axles gives about three times the endurance limit of those not peened. Their figures indicate an endurance limit of 13,000 psi for the straightened, 20,000 psi for the not-straightened shafts which were not peened and 43,000 for the shotpeened production shafts.

It will be easily understood that shotpeening has to be the last operation. Grinding and machining will destroy the thin compressive surface. Only a light lapping or honing operation has frequently been found to be beneficial. Figure 4 will prove the point in a very extreme case. This shows the test results of compressor discharge valves only .044 in. thick.

(TURN TO PAGE 120, PLEASE)

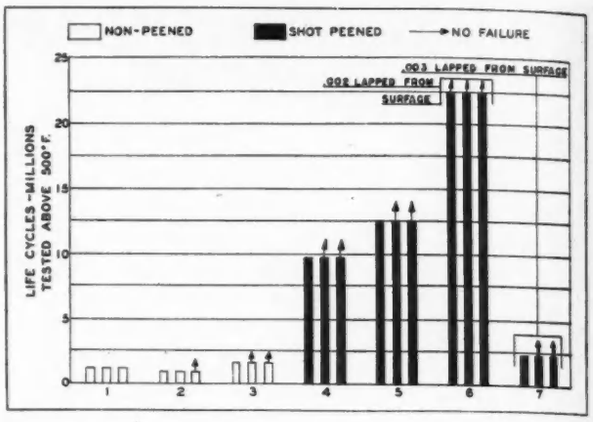
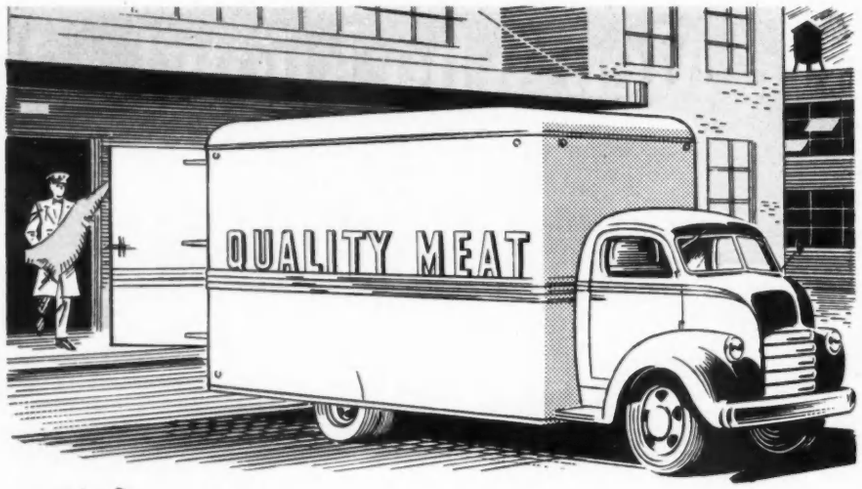



***Fig. 4. Fatigue life comparison of compressor discharge valves only .044 in. thick and operated at 500 deg F.***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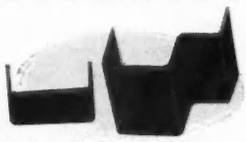
***HART SAVES YOU TIME • MAINTENANCE • COSTS!***

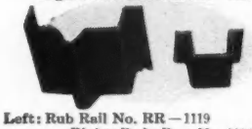
Don't be stymied by special body design. Hart supplies all the parts to produce a job to your individual requirements. Hart Service also includes styling, body design, engineering, dies and tools.

Have your body builder tell us your problem. By using Hart Service he'll not only furnish what you need, but save you time and money too. And replacement parts will always be available at quick delivery!

Write to Dept. "C" for Catalog and description of Hart Service.



Left: Cross Sill No. CS—1116
Right: Rub Rail No. RR—1117



Left: Rub Rail No. RR—1119
Right: Body Post No. 1104

Left: Corner Post No. CP—1122
Right: Corner Post No. CP—1120

**Body Post • Roof Rails • Rub Rails • Cross Sills • Fenders • Ball Corners • Roof Panels • Cab Roofs • Lintels • Wheel Housings • Roof Reinforcements • Windshield Assembly**

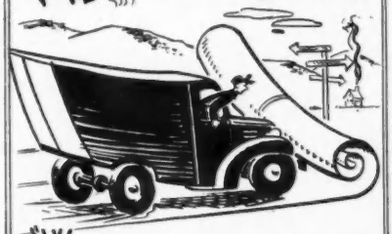
*A Single Source for Body Sections and Panels*

**HART PRESSED STEEL CORPORATION**

ELKHART, INDIANA



**WHO SAID IT?**



"WE WOULDN'T BUILD ROADS MUCH LESS THAN 7 INCHES AT THE EDGE AND 6 INCHES IN THE CENTER, NO MATTER WHAT KIND OF LOADS THEY WERE GOING TO CARRY. IF WE BUILT THINNER SURFACES, THEY WOULD CURL UP LIKE TISSUE PAPER IN THE RAYS OF THE SUN."

- ☐ HARRY S. TRUMAN
- ☐ JOSEPH B. EASTMAN
- ☐ THOMAS H. MACDONALD
- ☐ THOMAS E. DEWEY

*Answer on P. 120*

# ROAD SPEED GOVERNOR

PIERCE

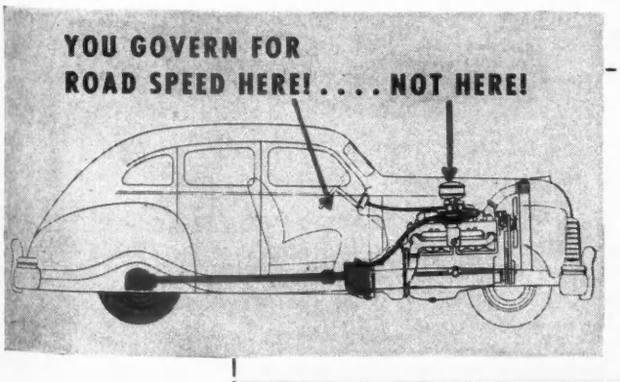
IT'S NEW
IT'S FLYBALL
IT'S UNCONDITIONALLY GUARANTEED
IT OVERCOMES EVERY OBJECTION TO VEHICLE GOVERNING

*Because...* it restricts miles-per-hour—and miles-per-hour alone.

- **BECAUSE** it allows complete, ungoverned performance and get-away at any speed —in any gear—up to the governed maximum.
- **BECAUSE** pay-loads and pay-miles are just the same as they would be if the vehicle were not governed at all.
- **BECAUSE** unwarranted, unauthorized and illegal speeds are impossible, tire-wear, fuel consumption, oil consumption, vehicle battering and speed-caused accidents and complaints are substantially reduced without reduction of vehicle efficiency.
- **BECAUSE** drivers have no objection to speed limitation which does not hamper normal driving nor reduce commissionable trips or vehicle loadings.
- **BECAUSE** the governor is sealed and tamper-proof—guaranteed to give satisfactory performance—without reservation.

*How?*

- **THIS GOVERNOR** is driven from the propeller shaft and therefore cannot restrict the engine in any way unless the actual miles-per-hour is at the predetermined limit.
- **THIS GOVERNOR** is mechanical (centrifugal, flyball) and is not dependent on the vagaries of manifold vacuum—nor is it affected in any way by the condition of the engine.
- **THIS GOVERNOR** is a rugged, trouble-free, precision instrument. It is a product of the rich experience and complete facilities of the pioneer designers and world's largest manufacturers of speed control equipment.

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PIERCE AND PIERCE-SERVO GOVERNORS FOR OVER-SPEED PROTECTION AND CONSTANT SPEED CONTROL ARE STANDARD EQUIPMENT ON MANY OF THE WORLD'S FINEST ENGINES

## Shotpeening

(CONTINUED FROM PAGE 118)

The usual high increase in fatigue life through shotpeening is shown in bar groups number 4 and 5. Group number 6 indicates another considerable increase in life as .002 in. was lapped from the surface. The next set of bars, number 7, indicates that by lapping .003 in. from the surface, the advantages from shotpeening have nearly all vanished. This test is particularly interesting because the valves are very thin and had to be peened very lightly and because they were operated at a temperature above 500 deg. F.

### Conclusions

THE foregoing should give some idea of the tremendous increases in fatigue life which can be obtained in shotpeening steel. Shotpeening has been found to be just as effective on non-ferrous metals. On some of these, such as magnesium and soft aluminum, it is necessary to use non-metallic shot made of walnut shelle, apricot pits, plastic or glass. Shotpeening, as any work hardening process, also produces a slightly harder surface. In some of the work hardening metals, such as high manganese steel and inconel, the increase in skin hardness is quite substantial.

It was mentioned in the beginning that shotpeening sets up a residual compressive stress in the surface. Usually we read about residual stresses only as harmful stresses. Residual stresses can also be used to our advantage and this is done very frequently, chemically by nitriding and carburizing and mechanically by shotpeening and surface rolling. To be valuable these residual stresses in the surface must be compressive because it has been proven frequently that a surface in compression will not fail. As practically all fatigue failures start from the surface these residual compressive stresses will give us the additional fatigue life which could be seen on the charts.

Shotpeening is still in its infancy and there are many things which we do not know about the process. However, it is old enough to have proven its great values. It was first used about twenty years ago. Today one cannot buy a car which does not have a number of shotpeened parts.

It has been found that shotpeening is not only valuable to the manufacturer but can also be of great help to operators of fleets. The author's company has successfully shotpeened replacement parts, such as springs, axle shafts, crankshafts, etc., for a number of trucking and bus fleets on the West Coast. Without doubt the breakdowns of these fleets have been decreased considerably. The best way, of course, would be if the manufacturers would shotpeen their equipment and spare parts. It is up to the customers to demand it. In the meantime many costly breakdowns can be avoided by taking advantage of the shotpeening process for replacement parts.

*END*

*(Please resume your reading on P. 48)*



WITH *Johnson*

**ADJUSTABLE TAPPETS**

**for FORD V-8's and MERCURYS** (85-100 H. P.)

You can't go wrong when you install **JOHNSON** Adjustable Tappets for Fords! You make more profit and gain more satisfied customers.

Designed and produced by "Tappet Specialists," suppliers of tappets of all kinds to America's leading engine builders, these tappets are easily and quickly adjusted without fitting of valves — with cylinder heads in place. Special spanners, included with each set of tappets, leave both hands free for quicker, yet more accurate adjustments, and the **JOHNSON** self-locking screw maintains this exact setting for many miles of smooth, quiet, full powered engine performance.

*CALL YOUR N.A.P.A. JOBBER TODAY*

*Johnson* PRODUCTS INC.
MUSKEGON, MICHIGAN
*"Tappets Are Our Business"*


## ● WHO SAID IT?

***ANSWER . . . (To Question on P. 118)***

**Thomas H. MacDonald, chief of the Public Roads Adm., in testifying before the Interstate Commerce Commission.**

*(Another Cartoon Quiz is on P. 124)*

*and dependability*

# DELCO *Heavy-Duty* BATTERIES

These new Delco heavy-duty batteries are the greatest commercial batteries that Delco has ever made. They are new in design, in construction, in materials.

More plates and larger plates have been incorporated to increase active area. Discharge capacity is greater. High charging rates are accepted without damage to the battery. Cycling is far less severe because *less work is required from each square inch of working surface.*

Other improvements are the new microporous separators that stand up under high temperatures and high gravity, eliminating a common cause of battery failure; newly designed cases that resist distortion under excessive heat; new plastic plate strap shields across the top of the elements to protect against short-circuits caused by displaced materials or distorted plates.

The result is longer battery life, reduced battery maintenance. But that's not all! The new Delco batteries simplify service, simplify handling. They have visual acid-level indicators to speed inspection and filling. They are equipped with "disappearing" steel handles which drop down flush with the case top when not in use.

Put these facts together, and you have a better all-round battery for heavy-duty service. The new Delco batteries will serve your fleet more economically, more dependably. See your United Motors distributor.

"THERE'S A NEW DELCO HEAVY-DUTY BATTERY FOR YOUR JOB"

UNITED SERVICE MOTORS

**DELCO BATTERIES**
**A UNITED MOTORS LINE**
**Available Everywhere Through**
**UNITED MOTORS DISTRIBUTORS**

**Delco-Remy**
DIVISION, GENERAL MOTORS CORPORATION

## Fifth Wheel

(CONTINUED FROM PAGE 46)

in shuttle service, but that a very difficult personnel problem was solved by its adoption. Even the huskiest drivers soon wore down under the strain of raising and lowering a steady succession of landing gears by hand crank and keeping a man on the job was a difficult problem. In fact, the first day the unit was put in service, the operator was ready to quit. After moving a few semis, however, he changed his mind and is still on the job.

Another advantage reported by users is that trailers can be lined up much more closely in wells, or at loading docks, or in the yard giving greater economy of space, because it is not necessary to leave room to get at dolly cranks. They say also that drivers like the hydraulic unit because it eliminates tugging, straining, bruised knuckles, and blistered hands occasioned by frozen crank bearings and jimmied up gearing.

Long has found that since the hydraulic fifth wheel was put in use, damage to landing gears during hook-up has practically been eliminated. With the fifth wheel fully adjustable for height, it is possible to back into the semi without ramming. With the conventional hook-up, the trailer often was pushed back if not adequately chocked, resulting in broken wheels and bent supporting arms.

Michigan Motor Freight also is using the hydraulic unit for switching trailers at its terminal yards. This company cites the same advantages listed by Long, and agrees that it is a real time saver and an excellent investment.

The consensus of users in Detroit is that the hydraulic fifth wheel offers operating economies for fleet operators who have enough trailers to move to justify the rather high original investment. About 35 to 40 moves a day appears to be the consensus as the minimum economical number. Its particular field is in shuttle service at yards, docks and warehouses and it is not considered a practical replacement for the conventional fifth wheel on the hauling tractor because of its higher cost which is due to the hydraulic pumps and controls.

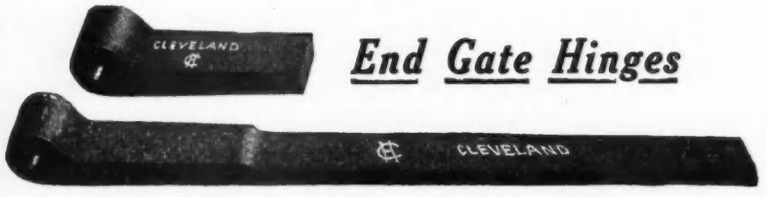
*END*

*(Please resume your reading on P. 47)*


"Cleveland"
HINGES

**In the smooth functioning of large auto bodies (trucks, busses, etc.) owners and drivers know well the importance of "Cleveland" Irons . . . how efficiently they operate, obviate wear, attention and replacement. All made possible by the designing, quality of materials and ENDURANCE we build into them.**

**All Hinges Are Made of Open Hearth Steel.**




*End Gate Hinges*

Long Hinges vary from 12" to 30" in length.
In sizes from 1"x1¼" to 2¼"x½"
**SHORT HINGES TO MATCH**

**A POST CARD WILL BRING CATALOG 22B**

*The* Cleveland Hardware & Forging *Co.*
Established 1887
3264 East 79th St. Cleveland 4, Ohio




PLASTILOCK 601 IS A NEW "STICKUM" DEVELOPED BY B.F. GOODRICH CO. IT IS USED FOR CEMENTING...

- ☐ THE PLIES OF A TIRE TOGETHER
- ☐ THE PAINT SURFACE TO THE BODY
- ☐ A PUNCTURE IN AN INNER TUBE
- ☐ THE LININGS ON BRAKE BANDS

*Answer on P. 126*

TAKE A TIP FROM ONE WHO SPEAKS FROM EXPERIENCE

## *For Better Brakes..*

# AN UNBEATABLE COMBINATION!

**Wagner**

### LOCKHEED HYDRAULIC BRAKE PARTS

Wagner Lockheed Master Cylinder and Wheel Cylinder Kits include all essential parts for a specific job. Also available as individual parts and as completely assembled cylinders.

**Wagner**

### LOCKHEED NO. 21 BRAKE FLUID

An all-season fluid that functions perfectly under all driving temperatures. Used by car manufacturers and recommended for all hydraulic brakes.

**Wagner**

### CoMaX BRAKE LINING

Unsurpassed for quick, safe, smooth stops. Long-lived because the ingredients wear slowly; doesn't compress or swell; uniform frictional qualities. Produced in rolls, blocks, sets or slabs. For details, consult nearest Wagner jobber, or write us.


**Wagner Electric Corporation**
6470 PLYMOUTH AVE., ST. LOUIS 14, MO., U. S. A.


LOCKHEED HYDRAULIC BRAKE PARTS and FLUID · NoRol
CoMaX BRAKE LINING · AIR BRAKES · TACHOGRAPHS
ELECTRIC MOTORS · TRANSFORMERS · INDUSTRIAL BRAKES

A47-2

## 70 Bodies a Year

(CONTINUED FROM PAGE 40)

we be able to load it full it would hold 4500 gal. of ice cream. In actual practice it carries a mixed load of ice cream and other ice cream novelties which do not weigh as much as the solid ice cream product.

### Departmentalized Shop

TO accomplish all this takes a considerable shop. Our building measures 128 x 98 ft., houses around a quarter of a million dollars worth of equipment and employs a full time staff of 32 men and two girls. But from it we produce everything required in the bodies except hardware and the few special forms mentioned above.

The arrangement of the body shop is shown in the accompanying layout plan which also shows the four principal departments—wood working shop, metal working shop, refrigeration department and machine shop. Within these sections we also have specialists in the installation of insulation and electrical fittings. The paint shop is located in a separate building.

We have made several experiments with a production line for body assemblies, but owing primarily to the variation in styles produced, we found that it did not pay. Hence our present system calls for spotting the chassis in the assembly area at the east end of the building and erecting the body on it. If, however, a particular chassis is not available we have special dollies made up to exact CA and frame length dimensions for all of the various truck chassis used.

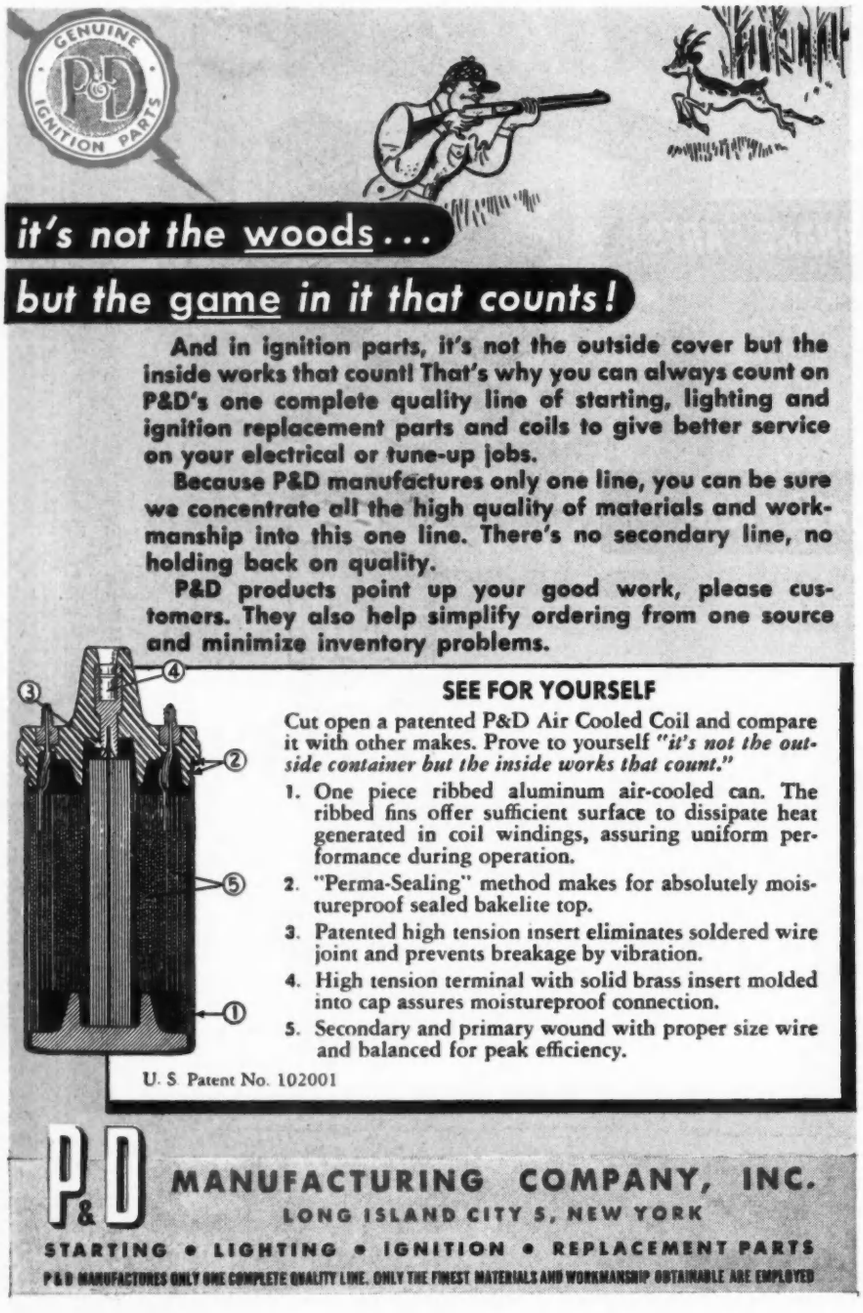
There is room for 16 average size units in this assembly area at the same time. Once the chassis or dolly is spotted a master work schedule is made out showing what type of body is to be fabricated and just when it will be ready for each particular function of construction.

The first step obviously involves the carpenters from the wood working shop. In the shop, with the help of three table saws, a band saw, a cut-off saw, a planer, a combination planer-jointer, a mortiser and numerous hand tools, all wood is precut to exact dimensions. As various sub sections are formed, they are carried to the chassis and set up. It's as simple as that, but, of course, there was a great deal of planning to get each piece standardized.

Screws and bolts in lieu of nails are used throughout this phase of construction. Experience showed that this feature pays off in much longer life. Electric drills and electric screw drivers speed up the work.

As the carpenters work there is an influx of metal reinforcing members, sub-frame assemblies and other accessories from the metal working shop that are installed in logical order. As carpenters near completion of their part of the work, electricians move in to wire the bodies for tail,

(TURN TO PAGE 128, PLEASE)



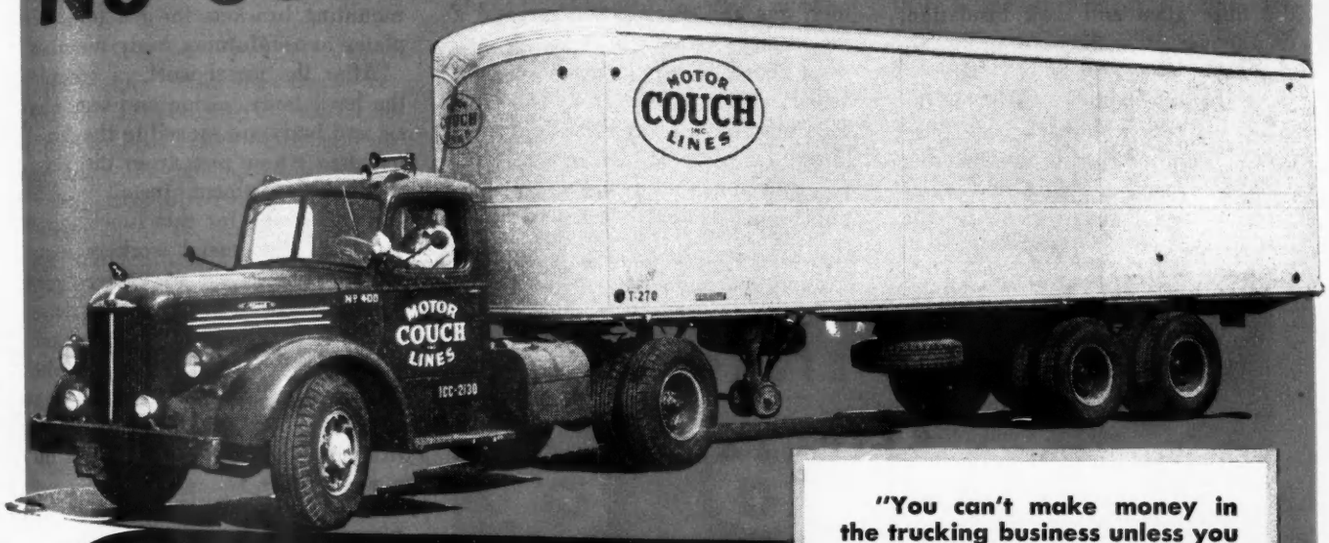
## ● WHAT'S NEW?

*ANSWER . . . (To Question on P. 124)*

**It is a new adhesive for holding brake shoes in place. Said to have twice the shear resistance strength of brass rivets.**

*(Another Cartoon Quiz is on P. 128)*

# No Guesswork! We Know . . .




"You can't make money in the trucking business unless you keep your operating costs in line. Many of us have learned that the hard way. Our records show us that Firestone Tires and Firestone Service have enabled us to keep tire costs right at rock bottom year after year."

KIRKE COUCH,
President, Couch Motor Lines

# Firestone
## TIRES AND SERVICE SAVE US MONEY

COUCH MOTOR LINES


THE Couch Motor Lines of New Orleans, one of the important common carriers in the South, relies upon its operating records for guidance in buying tires for its trucks. The records say, "Buy Firestone Tires every time—they're money savers."

Firestone Tires, backed by Firestone Service, will do the same for you or any other trucker. They will give you more original miles, more retread miles. There are thousands of operating records that prove it.

If you want lowest cost per mile and more dependable service, turn to Firestone Transports. Match them against any truck tire on any type of hauling job. Let them prove themselves to your own satisfaction.

*Listen to the Voice of Firestone every Monday evening over NBC*

Copyright, 1947, The Firestone Tire & Rubber Co.

## Firestone TRANSPORT TRUCK TIRES

## 70 Bodies a Year

(CONTINUED FROM PAGE 126)

marker and ceiling lights. After them come the insulation men who put in the fibre glass and cork insulation, then cover it with water-proof tar paper.

By then the body is ready for the metal workers who have been busy in the meantime cutting and forming panels, corners, molding and other parts. They take over where the carpenters leave off with chassis and body still in the same position.

Metal working equipment includes three sheet metal formers, two metal shears (one with a 10 ft. blade) a roller and crimper, a power hammer, gas and electric welders and a fascinating device which the department shares with the machine shop called a "universal iron worker." This machine can do just about anything to a piece of iron or steel that you can imagine including coping, punching, straight shearing, angle shearing and round shearing. It does in seconds what used to take almost hours and is particularly adapted for use in connection with structures formed from angle iron, such as the sub-frame for the compressor units, mounting brackets for the hold-over plates or reinforcing body members.

After the metal workers complete the basic body, inside and out, chassis and body are moved to the finishing area where men from the refrigeration department install all the gear necessary for this function. At the same time metal workers install the hardware while carpenters come back for final touches and electricians mount all required lights. Finally the body is moved to the paint shop in a near-by building where it is sanded, primed, surface coated and decorated for the particular fleet unit to which it is assigned.

As in most plants, the machine shop plays no direct role in actual production. But its function is none the less vital for here are located the men and machines to keep all the other equipment working and to lend a hand at vital stages all along the way. In addition to the "universal iron worker" major machine shop equipment includes a 12 in. swing lathe, a milling machine, two drill presses, a tool grinder, two bench grinders and a 50-ton hydraulic press.

*END*

***(Please resume your reading on P. 41)***



When fleet operators and service superintendents discuss brake lining, it's only natural that Grizzly is brought into the conversation. Grizzly's position as one of the largest, most dependable brake lining manufacturers plus its enviable record of producing fine brake lining for both automotive and industrial fields for over 30 years, merit the projection of Grizzly into any brake lining discussion.

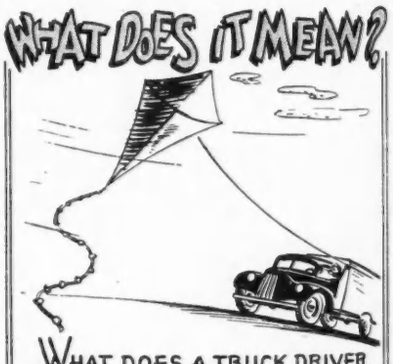
The next time brake lining or brake lining problems enter your job, consult Grizzly. Grizzly's research, engineering and manufacturing experiences can be of real assistance to you.

*"There's a Grizzly Distributor near you—call him today!"*
*Grizzly Manufacturing Company, Faulding, Ohio.*

***"Bear in Mind". . . ask for***

**GRIZZLY**
REG. U. S. PAT. OFF.
**BRAKE LINING**






WHAT DOES A TRUCK DRIVER MEAN WHEN HE SAYS THAT HE IS "FLYING A KITE"?

- ☐ HE IS PULLING TWO TRAILERS
- ☐ HE IS TRAVELING EMPTY
- ☐ HE IS SPEEDING
- ☐ HE HAS A TRAFFIC COP FOLLOWING HIM

*Answer on P. 131*

## Winter Brake Tests

(CONTINUED FROM PAGE 35)

of braking distances of from 30 to 40 per cent.

### Acceleration Test

THE empty standard truck required 11 seconds to accelerate through a speed range of 10 mph on glare ice, while the empty four-wheel-drive truck required only 6 seconds, a reduction of 45 per cent. A passenger car required 21.2 seconds. All vehicles were tested in a no-load and bare tire (without chains) condition, as only under these conditions was there sufficient spinning of the wheels to insure that the tests were a measure of traction.

### Pumping Must Be Right

PUMPING the brakes by alternately applying and releasing the brake pedal produced considerably shorter braking distances than locking the brakes by a hard, steady brake application. Tests with two different passenger cars showed a braking distance reduction of from six to 18 per cent, and with a loaded truck a reduction of from 5 to 16 per cent.

Contrary to the general belief, the tests demonstrated that the proper technique consists of a series of very rapid and hard jabs on the brake pedal, making certain that the brake is completely applied and completely released on each individual stroke. This technique has a logical theoretical explanation. Since the friction developed by a tire is at a maximum at the instant before the wheels lock and sliding commences, the shortest braking distance should be obtained by reaching this peak friction the greatest possible number of times during the stop. Since it is extremely easy to lock the wheels on glare ice and since it is very difficult, if not impossible, to tell by "feel" whether the wheels are locked or sliding, a gentle pumping action will not lock and release the wheels rapidly enough to produce a shorter stop than a locked wheel condition. In this connection, it should be realized that pumping is applicable to any braking system which can lock and unlock with great rapidity; with a relatively sluggish braking mechanism it is very likely that pumping would not be effective in reducing the stopping distance.

From the above, it may be concluded that pumping the brakes will reduce braking distances to some extent, providing the braking mechanism is of a type which will function rapidly enough and providing also that the driver employs the proper technique. While these provisions might be an argument against pumping for reducing braking distances, there is one other factor, steering control, which must be considered. Since steering control is completely lost when the wheels are locked, pumping is recommended as the proper method of braking on ice, even for the inexpert driver.

(TURN TO NEXT PAGE, PLEASE)

### ● WHAT DOES IT MEAN?

*ANSWER . . . (To Question on P. 128)*

**The phrase is trucker's lingo for pulling two trailers, one behind the other.**

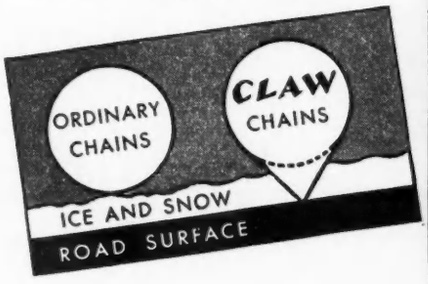
*(Another Cartoon Quiz is on P. 132)*



Use CLAW Tire Chains and stop *worrying about winter driving.* For CLAWS have a knife-sharp wedge of extra steel that bites in at the point of traction. You get a positive grip that minimizes the dangers of stalling and skidding on snow or ice covered highways. CLAW links are made of a special, hardened alloy steel...have 20% more steel in every link...give extra mileage...extra traction...greater safety.

CLAW Tire Chains should always be at hand. Avoid delays...danger...embarrassment. Drive with confidence... drive with CLAWS.

Columbus-McKinnon Chain Corporation, General Offices: Tonawanda, N. Y., Plants at St. Catharines, Ont., Can. and Vereeniging, So. Africa.




CLAW
TIRE CHAINS
for
PASSENGER CARS, TRUCKS and BUSES

## Winter Brake Tests

(CONTINUED FROM PAGE 131)

### "Power Breaking"

POWER BRAKING, consisting of applying power (without accelerating) with the right foot while the left foot actuates the brake pedal, reduced braking distances for a four-wheel-drive truck equipped with hydraulic brakes actuated by a vacuum booster. With this truck empty, locked-wheel stops averaged 299 ft at a temperature of 32 deg. F. compared with a power braking average of 261 ft, a reduction of 13 per cent. Locked-wheel stops averaged 313 ft with this same truck in the full load condition at a temperature of 22 deg., while power braking produced an average braking distance of 246 ft, a 21 per cent reduction.

On the other hand, tests with a standard truck equipped with air brakes showed no appreciable differences in braking distances. Locked-wheel stops averaged 259 ft at a temperature of 31 deg., while power braking averaged 257 ft.

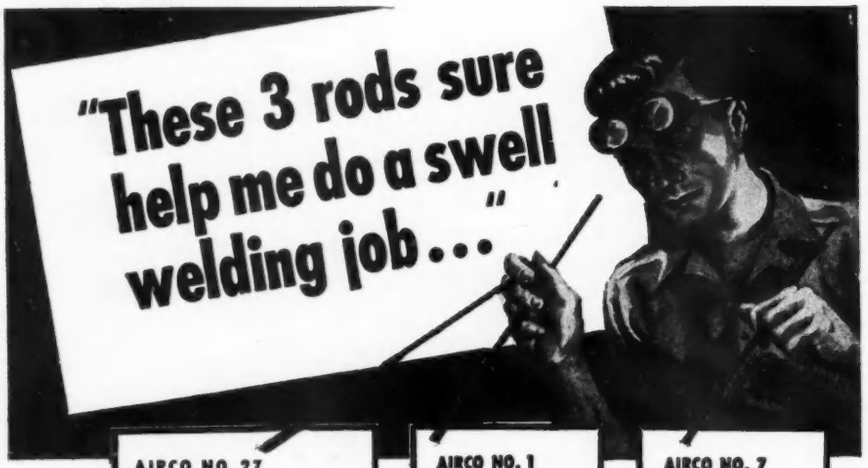
### Lake & Road Surfaces Alike

A SERIES of braking distance tests were made on natural road ice, approximately 3/8 in. thick and spotted with snow, to compare its slipperiness to that of lake ice. At a temperature of —4 deg., braking distances of a passenger car equipped with synthetic tires averaged 113 ft. on road ice and 133 ft. on lake ice, a difference of about 15 per cent. Under the same conditions, braking distances on packed snow averaged 103 ft.

### Cornering Ability Tests

CORNERING ability, expressed in terms of the maximum speed maintainable on a circle of 150 ft. indicated that regardless of the vehicle, load, or temperature, these maximum speeds with bare tires seemed to be confined to very narrow limits, the values ranging from 13.5 to 15.0 mph. A maximum speed of 19.3 mph. was attained with a loaded truck equipped with premium chains on all wheels, the vehicle operating at full throttle at the time. Chains on the rear wheels only increased speeds somewhat over that attained with bare tires, but here, of course, the limit is determined by the bare front tires.

(TURN TO PAGE 134, PLEASE)


AIRCO NO. 27
LOW FUMING
BRONZE ROD
an excellent type of low-fuming bronze rod, with minimum release of obnoxious and detrimental fumes. High tensile strength; good tinning qualities on steel (on cast iron paint surface with Airco Hi-Bond Flux).

AIRCO NO. 1
ALLOY STEEL ROD
weld deposit produces a relatively high percentage of ductility. Smooth flowing, it will withstand considerable heating without burning.

AIRCO NO. 7
MILD STEEL ROD
designed for inexpensive general automotive repair jobs. A smooth flowing rod of dependable uniform quality.

For more than a quarter century, welding operators and burners have found all Airco rods, fluxes and other supplies to be "tops in the field" for all oxyacetylene welding and cutting jobs.

Airco's offices are conveniently located for quick service. Call your nearby Airco office today.

Save buying time
*Send for* AIRCO'S
ILLUSTRATED CATALOG ADC-640
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AIRCO




WHERE'S HOMER?

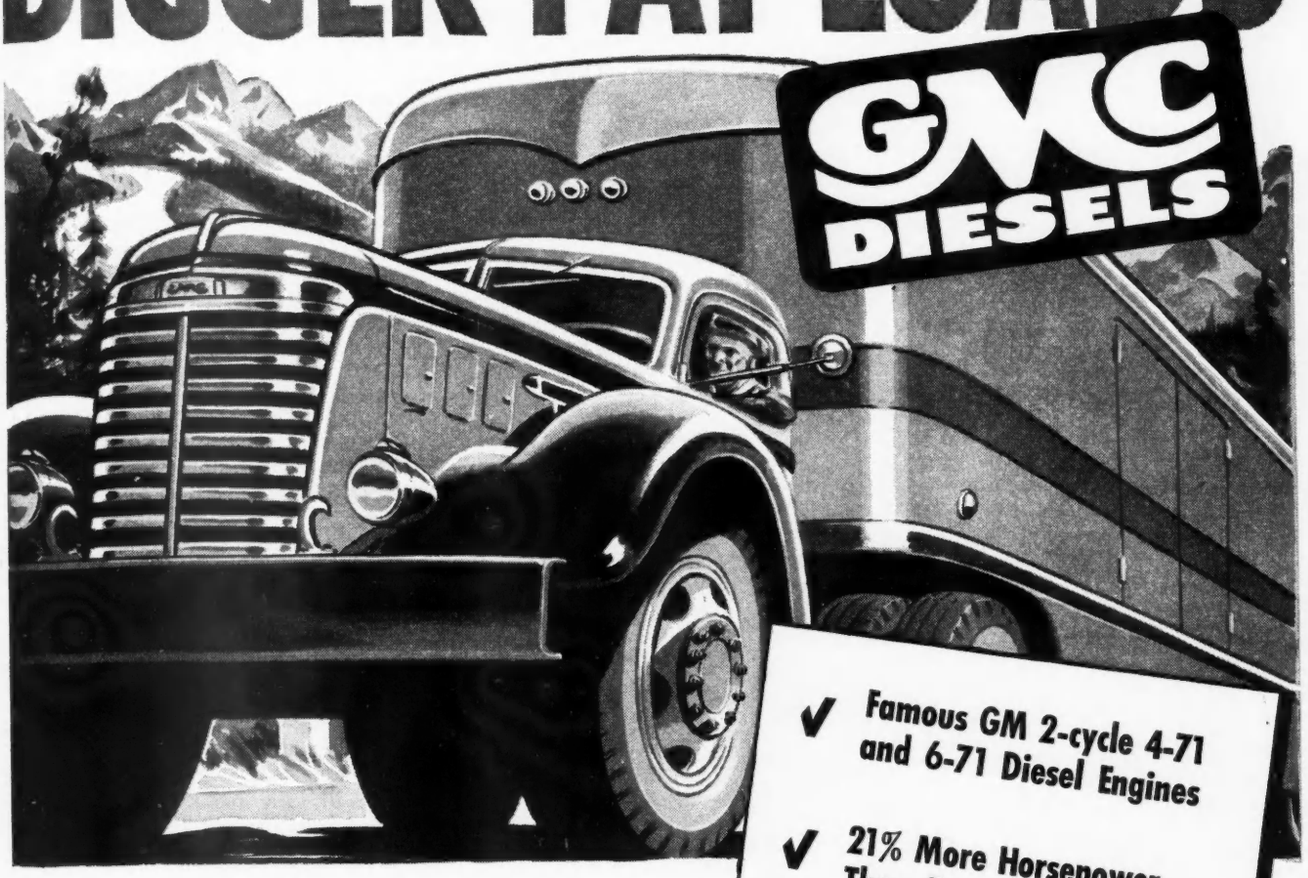

HOMER WANTS TO BUY A NEW TRUCK, SO HE FIGURED HE'D HAVE THE BEST CHANCE IN THE STATE THAT HAD THE MOST TRUCK DEALERS, WHICH IS...

☐ NEW YORK ☐ CALIFORNIA
☐ ILLINOIS ☐ PENNSYLVANIA

*Answer on P. 134*

# *Powered to Pull*

# BIGGER PAY LOADS




- ✓ Famous GM 2-cycle 4-71 and 6-71 Diesel Engines
- ✓ 21% More Horsepower Than Previous Models
- ✓ Chassis Specially Designed for Diesel Operation
- ✓ Widest Range of Models on the Market
- ✓ Gross Weight Ratings 30,000 to 90,000 Pounds

GMC 2-cycle Diesel truck engines provide twice as many power strokes as conventional 4-cycle engines. Pay loads can be greater because engine weight is less, with the same amount of power. Other famous GMC Diesel engine features include Direct Triple-Duty Injectors, Full-Flo Lubrication, Pressurized Water Circulation, Thermostatically Controlled Water By-Pass and Radiator Shutters.

GMC Diesel truck chassis are exclusively engineered for Diesel operation with such outstanding features as Straight Frame Side Rails, Wide Track Front Axles, Heavy Duty Clutches and Brakes, Transmission and Rear Axle options to handle all types of jobs.

GMC also gives you the widest selection of Diesels on the market today . . . 8 different truck and tractor models with Gross Weight Ratings from 30,000 to 90,000 pounds . . . all ready for quick delivery.

**GMC TRUCK & COACH DIVISION • GENERAL MOTORS CORPORATION**

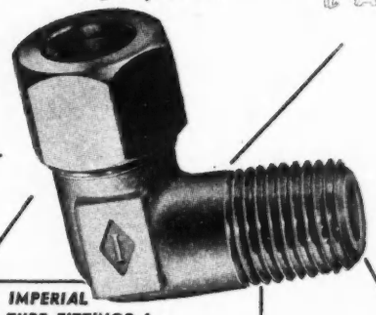
## More Cement for Better Roads


**Carrying a pointed reminder of trucking's part in the better highway program, this Geo. F. Alger bulk cement combination was one of the biggest units in recent Detroit parade as preliminary to truck Roadeo at state fairgrounds**


NOW . . . FINER BECAUSE THEY'RE FORGED ☆

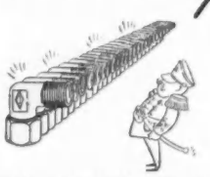
FORGED FITTINGS ARE TOUGHER
Forged fittings stand up better under hard knocks and vibration.

FORGED FITTINGS ARE STRONGER
That's why forged brass fittings will withstand higher pressures.



FORGED FITTINGS ARE CLOSER GRAINED
Close-grained structure assures against blow holes or other concealed defects.

IMPERIAL TUBE FITTINGS for gas, oil, and brake line work.



DRYSEAL PIPE THREADS
On pipe thread ends. Note longer length on sizes ¼" and over. No dope required.

FORGED FITTINGS ARE MORE UNIFORM
Dimensions of forged fittings are held within extremely close limits.

☆ Elbow and tee bodies on Compression, Flared, Hi-Duty, Flex and Inverted Flared Tube Fittings are being converted to forgings. Straight fittings made from brass rod.

SEE YOUR JOBBER

Write for Bulletin No. 249 on Forged Fittings

IMPERIAL leads again with an important step forward in tube fitting quality. These new Imperial fittings for gas, oil and brake line work have forged bodies on elbows and tees and SAE Dryseal Pipe Threads on pipe connections.

All the advantages above combine to bring you something far better in tube fittings. Now, more than ever before the Imperial Diamond "I" on fittings is your assurance of top quality.

IMPERIAL BRASS MANUFACTURING CO.
1207 West Harrison Street, Chicago 7, Illinois

IMPERIAL

BRASS FITTINGS • FLEXIBLE FUEL LINES • TUBE WORKING TOOLS • BATTERY HYDROMETERS BARREL FAUCETS • WELDING EQUIPMENT


(CONTINUED FROM PAGE 132)

### Natural vs Synthetic Tires

A COMPARISON between the braking and accelerating abilities of natural and synthetic rubber tires showed the natural rubber tires somewhat better. Braking distances on lake ice ranged from a low average of 125 ft. to a high average of 210 ft. with the synthetic tires, compared to a range from 84 ft. to 169 ft. with the natural rubber. This reflects a difference in braking ability between the two types of tires ranging from 20 to 33 per cent.

However, braking distance tests on packed snow at a temperature of 0 degrees averaged 95 ft. with the synthetic tires as against 89 ft. with the natural rubber tires. This is a difference of only six per cent. Acceleration tests on glare ice through a speed range from 10 to 20 mph. averaged 21.2 seconds with the synthetic tires and 16.3 seconds with the rubber tires, a difference of 23 per cent.

### Reduced Pressure Little Help

THE rather common practice of reducing tire pressures to increase traction was investigated to the extent of conducting a series of passenger car braking distance tests on ice at temperatures varying from 0° to 2°. These tests were run at a "normal" pressure of 32 lbs., at 27 lbs., and at 22 lbs. At these pressures braking distances averaged 132 ft., 130 ft., and 132 ft., respectively. While it may be concluded that reducing tire pressures will not aid braking ability on ice at these particular temperatures, the results are too limited to draw any general conclusions.

The Committee on Winter Driving Hazards has prepared a complete report of its Clintonville tests which is expected to be available for distribution to the commercial vehicle industry and others at the National Safety Congress to be held in Chicago on October 6-10.

*END*

*(Please resume your reading on P. 36)*

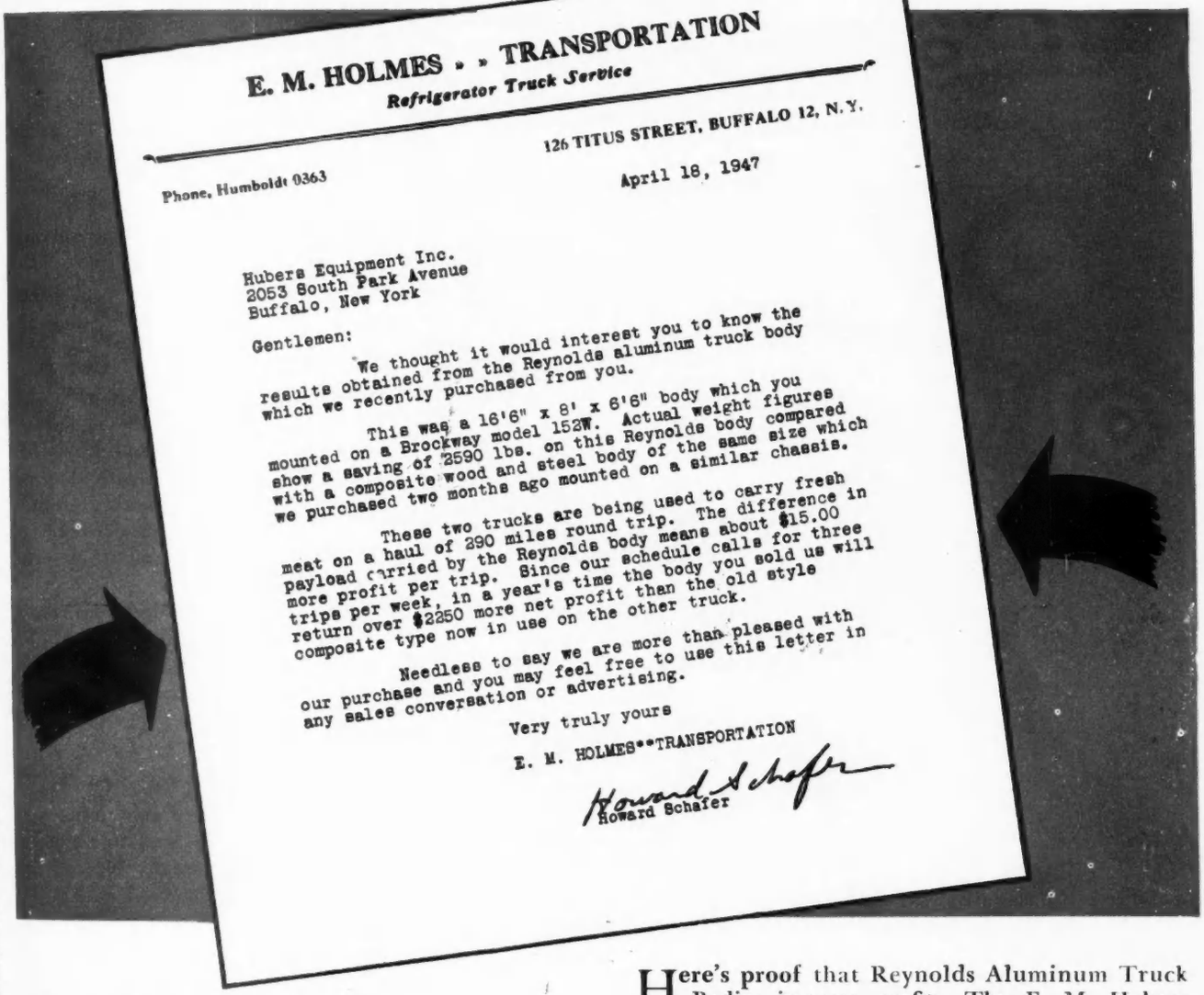
### ● WHERE'S HOMER?

*ANSWER . . . (To Question on P. 132)*

**Pennsylvania with 2074 truck dealers leads all other states. Illinois is second with 1688.**

# $2250 MORE PROFIT PER YEAR

## ...writes the E. M. Holmes Transportation Company



E. M. HOLMES • • TRANSPORTATION
*Refrigerator Truck Service*

126 TITUS STREET, BUFFALO 12, N. Y.

Phone, Humboldt 0363

April 18, 1947

Hubers Equipment Inc.
2053 South Park Avenue
Buffalo, New York

Gentlemen:

We thought it would interest you to know the results obtained from the Reynolds aluminum truck body which we recently purchased from you.

This was a 16'6" x 8' x 6'6" body which you mounted on a Brockway model 152W. Actual weight figures show a saving of 2590 lbs. on this Reynolds body compared with a composite wood and steel body of the same size which we purchased two months ago mounted on a similar chassis.

These two trucks are being used to carry fresh meat on a haul of 290 miles round trip. The difference in payload carried by the Reynolds body means about $15.00 more profit per trip. Since our schedule calls for three trips per week, in a year's time the body you sold us will return over $2250 more net profit than the old style composite type now in use on the other truck.

Needless to say we are more than pleased with our purchase and you may feel free to use this letter in any sales conversation or advertising.

Very truly yours

E. M. HOLMES••TRANSPORTATION

Howard Schafer

Howard Schafer


**Here's proof** that Reynolds Aluminum Truck Bodies increase profits. The E. M. Holmes Transportation Company made $15 *more* profit per trip . . . estimates $2250 *more* profit per year.

An experienced body fabricator in your own locality has a complete stock of Reynolds van-type truck bodies made from standard parts. You have your choice of over 10,000 different combinations of body models, lengths, doors and linings. Repairs can be made quickly from standard parts in stock...no costly layups.

These revolutionary van-type truck bodies are in volume production today. For further information write Reynolds Metals Company, Truck & Trailer Division, 1419-D Dixie Highway, Louisville 1, Ky.

REYNOLDS METALS

## REYNOLDS ALUMINUM TRUCK BODIES

## PM Plan

(CONTINUED FROM PAGE 37)

considered when the scheduled PM day rolls around. Since the swing man does not know the route as well as the regular driver we do not like to ask him to take a truck other than the regular one.

In order to keep track of these various factors I have devised and drawn up two charts which I keep posted above my desk and always refer to when any truck is due for a PM.

The first chart, called the "Light Day" chart (Fig. 2), is marked off into four main columns—a column for the route number; a column for the truck number; a column designating the "light" days and a column for special remarks.

Thus we will have Route No. 22; truck No. 228. Since the light day falls when the truck is delivering on the "A" area of the route under the light day column we mark in "A." Under special remarks we put in such notations as these: "the driver wishes to be notified a day in advance when the scheduled PM is called for." Or "the driver wishes to operate a stand-up truck the day his regular truck will be in the garage." We pay strict attention to these notations as a means of keeping our drivers satisfied.

The second chart, we call the "Day-Off" schedule. It is a very simple affair, similar to the "light day" chart indicating the day the swing man will be operating on a certain route.

Thus, when we are to bring the truck in for PM our routine followed is this:

1. We consult our PM Schedule Form No. 325 to see what date the truck is due in.
2. We look at our "Light-Day" chart to make sure this scheduled date does not fall on a heavy day.
3. Then we look at our "Day-Off" chart and be sure that providing the first two forms show a clear picture, that the scheduled date does not fall on the day the swing man is to work the route.

If all of these conditions prove healthy then we pull the truck. We have found it necessary to adopt this system both to satisfy our PM and the truck drivers.

### Night Rack for Signals

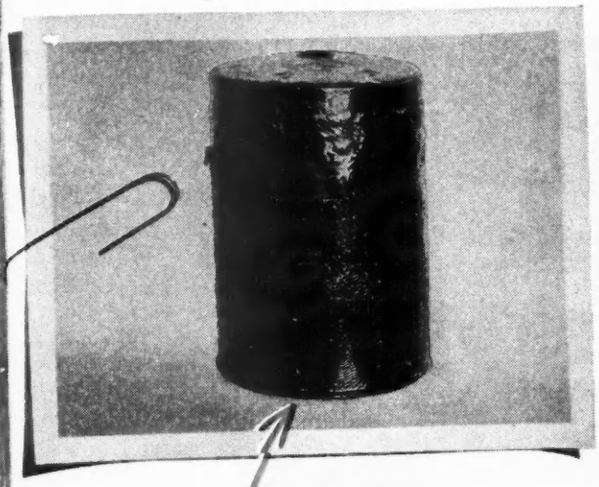
WE have a board containing slots nailed to the wall in the main portion of the garage. We call this board the "Night Rack" (Fig 4). Each slot is numbered to correspond to the various route numbers. If something is to be done to the truck operating on this route or some message is to be gotten to the driver I make out the note and place it in the proper slot in the Night Rack. This Rack is consulted every morning by drivers and garage personnel.

For ordinary messages we use white note paper. When a PM is scheduled we use pink notepaper. Stuck in the proper slot on the Rack this note can be spotted 40 ft away and notifies all concerned, that a scheduled PM is coming up. Or it warns that a general overhauling is due. In any event, it warns the checker to load the spare truck and not the regular truck. It warns the driver

(TURN TO PAGE 138, PLEASE)

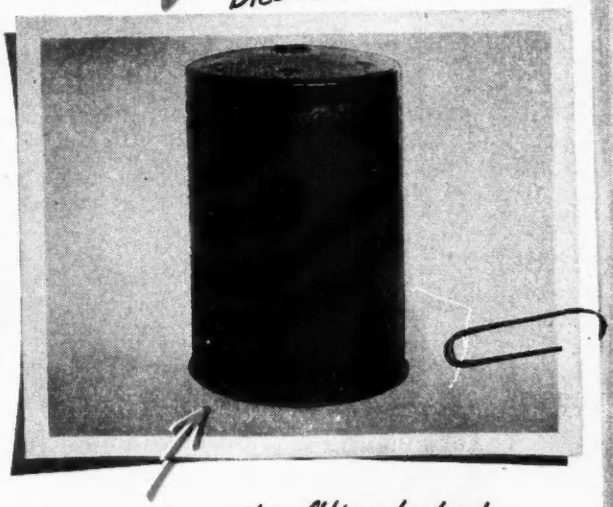

# LUBE MEMO

## How Joe stopped Filter Clogging



Joe says filters have gummed up like this after about 600 hours on oil he's been using

Joe says nothing but RPM Delo Oil in his Diesels from now on



Here's how the filter looked after 600 hours on RPM Delo Diesel Engine Lubricating Oil

Joe finds RPM Delo Oil keeps filters clean because:

1. It's compounded to resist oxidation and minimize sludge.
2. Its "detergent" cuts down sludge.
3. It remains stable in the presence of moisture.

DIESEL ENGINE RPM DELO LUBRICATING OIL

Set up trial on RPM Delo Oil Today!

STANDARD OF CALIFORNIA • San Francisco, Calif.
THE CALIFORNIA COMPANY • Denver, Colo.
STANDARD OIL COMPANY OF TEXAS • El Paso, Texas
THE CALIFORNIA OIL COMPANY • New York

## PM Plan

(CONTINUED FROM PAGE 136)

he is going to be using another truck for a day or so.

### "A" Service Takes Three Hours

WHEN we give our PM "A" service every month we follow religiously all items as outlined on the form. Nothing is missed with the exception of sparkplugs and oil change.

For these I use another home-made simple chart which is divided into three columns; one for the Truck number; the next is headed "Oil Change" and the next is headed "Spark Plugs."

Under "Oil Change" we mark in the date of the last change. Since we know our fleet intimately and since we know what trucks are or are not filter equipped we know pretty well when to change oil. While we go by the condition of the oil we do not take any chances with it.

Under the column "Spark Plugs" we mark in an "X" at every PM. When there are four "X's" in a row we clean and adjust all plugs. Experience has proved to us with both oil and sparkplugs that this is an efficient and time-saving way of handling this end of the PM.

Every 5000 miles we put fuel in the fuel pump and give it a pressure and vacuum test. We check for leaks and loose mountings.

We depend on the sound of the valves as a guide to possible adjustment. We oil all door hinges, grease all door tracks, make certain all linkages are greased. Tires are inflated weekly and batteries are inspected weekly. If these use too much water, if cells show differing charges, we give a voltage check.

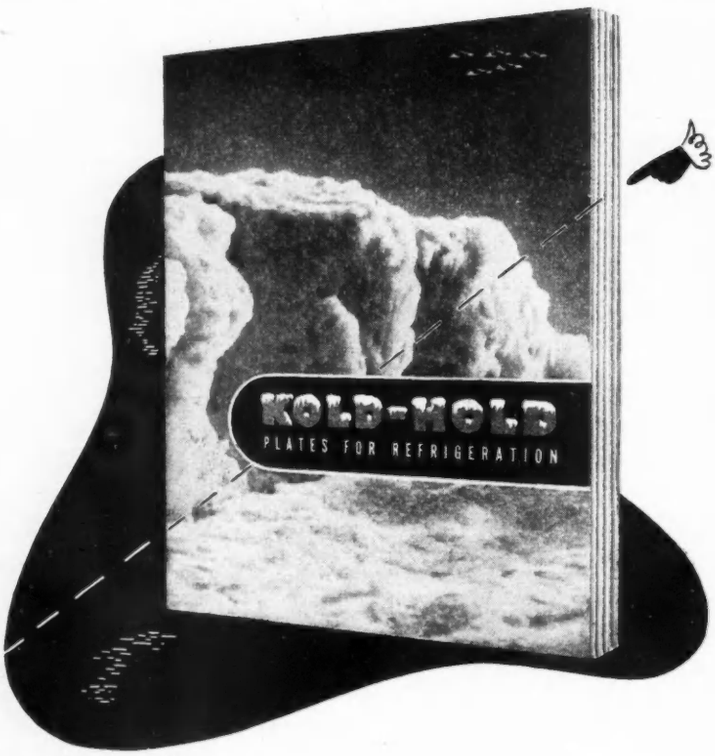
On the average our "A" service takes us three hours. This service is my personal baby. By following exactly all recommendations on the form I believe we have avoided hundreds of potential service calls.

### "B" Service at 15,000 Miles

WE have found that giving the more thorough and complex "B" service, GMC Form No. 203, every 15,000 miles is enough for us. I keep a permanent record on my desk giving mileages when the "B" services come due. But as the time for the "B" service approaches and as we do our "A" servicing we watch certain parts carefully; brake linings for instance; and for oil or fluid leaks from the wheel cylinders.

If it appears that a wheel pull is necessary we pull it and, even if the 15,000 mile mark is not yet reached,

(TURN TO PAGE 142, PLEASE)


contents

*Refrigeration* KNOW-HOW

The new Kold-Hold Catalog is a book of benefits and savings. It contains refrigeration know-how . . . information relative to the better storage and transportation of perishable products at lower costs. This catalog shows that Kold-Hold Serpentine Plate Type Evaporators have no equal in efficiency and dependability for locker plant space cooling, for shelves and stands in sharp-freezing or as cabinet liners, shelves or dividers. It explains how "Hold-Over" Plate Type Evaporators maintain the temperature of delivery bodies at the uniform level necessary in the successful transportation of fresh meat, ice cream, frozen foods and other perishables.

If you are interested in better storage and transportation of your products, write for this new free book of refrigeration knowledge today.

KOLD-HOLD

KOLD-HOLD MANUFACTURING COMPANY
620 E. HAZEL STREET LANSING 4, MICHIGAN


### Fleet Servant


**Bob Pepper of Ridgefield, N. J. brings gas, oil and lubrication service to several fleet accounts in the area with his "Cities Service Fleet Servant." Two nights a week he is on deck at the Midget races in nearby Lodi, but this is only a side-line to his up-and-coming business with fleets**


## Multiple-Ply Cover . . .

**Much Longer Wearing than on Passenger Car Belts**


**SPECIAL Heavy-Duty Compound**

# RAYON CORDS

## Of Extremely High Tenacity

For more than a year now, Gates Truck and Bus Belts have been built with RAYON CORDS — and are the ONLY Truck Belts in which you get the extra strength and extra service life of Rayon Cords. You *know* how greatly Rayon Cords increase the life of Truck *Tires!* Why not have this same advantage in your Truck *BELTS?*

### The Patented CONCAVE SIDE

Like all Gates Belts, the Gates Truck Belt is built with the famous life-prolonging Concave Side—a Gates Patent.

## Make *Sure* That the Truck Belt *You* Get is Marked with this (T)*

Look for the letter "T" on the belt itself—as well as on the label—of every belt you buy for truck service. "T" means that the belt has been specially engineered for TRUCKS and BUSES. You can be sure of getting the belt designed for this more demanding service only by seeing to it that you are delivered belts which bear this letter "T".

*REG. U.S. PAT. OFFICE

# Actual Records of Biggest Truck Belt Users Say—

# 50% to 80% Longer Wear!

**Gibson Lines** — 90% LONGER SERVICE

Sacramento, Calif.
"... gives 90% longer service than even your pre-war belt."

**Midland Motor Bus Co.** — LASTS 75% LONGER

University City, Mo.
"... lasting 75% longer in very tough service."

**Jerrel Motor Co.** — 50% TO 60% MORE SERVICE

Jarrel Texas
"... giving 50% to 60% more service—far the best we've used."

**Lexington Railway System** — 70% INCREASED LIFE

Lexington, Ky.
"We have increased belt life about 70% with your Truck belts."

**All American Bus Lines** — 80% LONGER WEAR

Chicago, Ill.
"We are getting 80% longer wear than any other belt ever gave us."

**Bloomingdale Dairy** — CUTS COSTS IN HALF

Newark, N. J.
"Since adopting Gates Truck Belts we are using only half as many belts as before."

**Beard Machine Shop** — 75% MORE SERVICE

San Angelo, Texas
"We're getting 75% more service than from any other belt we ever used."

THIS IS A Gates PRODUCT

*REG. U.S. PAT. OFFICE

THE MARK OF *SPECIALIZED* RESEARCH

## The GATES RUBBER CO., Denver, U. S. A.

**World's Largest Makers of V-Belts**

## PM Plan

(CONTINUED FROM PAGE 138)

we may decide at this time to give the truck the "B" service.

### 31-Month Record

WE use a General Motors Record sheet which gives us a continuous record of our PM work over a period of 31 months, Fig. 3. We keep these sheets in a specially constructed case fastened to the wall near my desk. These sheets show whether an "A" or "B" PM has been done; shows what other work was done; mileages at which it was done and the truck the work was done on. It also shows the month and date the work was done. Work done on the truck is marked in on this sheet in code; which code is taken from a master code sheet.

While consultation of this chart provides an excellent case history it serves us in another valuable manner. Occasionally we mark in operations on the sheet with *blue pencil*. This *blue pencil* denotes emergency service performed between regular PM inspections.

To us these blue pencillings are "tell tale" markings. For instance, one such blue pencilling showed that a fuel pump fouled and had to be fixed. I immediately asked myself, "Why didn't I catch this fuel pump on the regular PM? Did I overlook it?"

We also have a regular "D" service where an engine is reconditioned or changed. This work is always done at our Main Gibson Avenue garage. But we are the lads who decide when an engine needs reconditioning or rebuilding. To decide this we rely largely on our gas consumption sheets. Since this sheet is filled in daily it gives us an excellent story of engine condition.

### Engine Service Record

BUT we do have one other permanent record, a home-made chart dealing solely with engine work. This chart is posted in the same wall case holding the 31-month continuous record sheets. (Fig. 3.) This chart not only keeps us posted on what has been done to engines but, since we are fond of experimenting here at North Branch, frequently proves to us that maintenance practice can be improved no matter how good one might have thought it.

For instance, and solely as an experiment on Truck No. 317 in May, 1944, we fixed Exhaust Valves No. 1. In January, 1945, some thousands of miles later, we fixed Exhaust valves No. 2 and in March, 1945, Exhaust valves No. 3 and No. 4. This record simply proved to us that when you fix one valve you might just as well go to work and fix them all at the one time. In the long run it saves money, time and keeps the truck out working where it should be.

Our PM program is working successfully. Figures show we have reduced road calls by more than half. But the administration of the PM program is, we feel, the most important part. Trucks must be brought in regularly, gone over thoroughly and the recommendations that the manufacturers have worked out followed religiously.

*END*

*(Please resume your reading on P. 38)*


AN ACE CORPS OF FIRE GUARDSMEN
by
FLAMEFOIL

They're on guard on all fronts in American Industry . . . the remarkable FLAMEFOIL flameproof fabrics that turn the "cold shoulder" to scorching blazes and ward off sparks that often lead to big fires, heavy losses, injured workmen.

A lighted match *will not* start a fire on FLAMEFOIL fabrics because they are protected by a patented* finish that penetrates every fibre.

These are your FLAMEFOIL Guardsmen, a coordinated corps of versatile fire guards, ready for many duties. These are a few of their assignments:

**FLAMEFOIL CANVAS** . . . a first quality canvas performing great safety work in awnings, tarpaulins, canopies, welding curtains, burners' and painters' drops, machinery covers, protection for inflammable supplies and equipment. It is mildewproof, water and weather resistant, too.

**FLAMEFOIL FABRIX** . . . A lightweight, flameproof textile is serving as a fire-guard in work clothes, mattress ticking, drapes, curtains, upholstery.

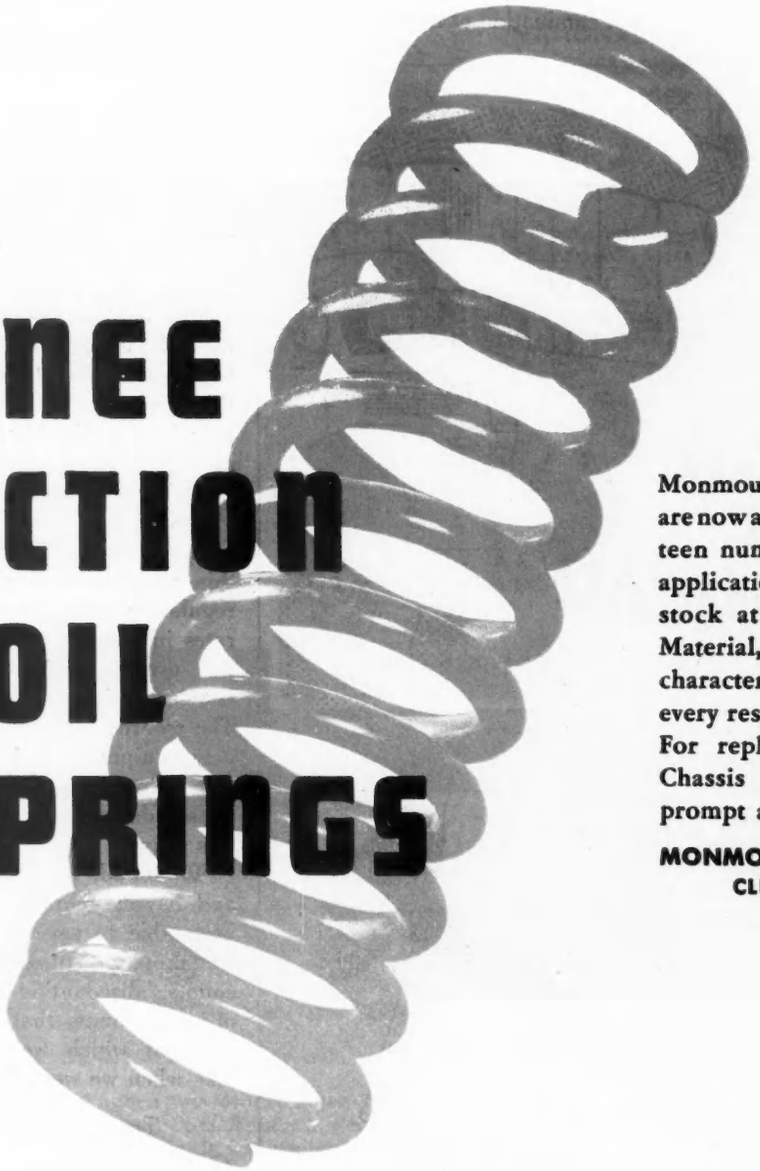
**FLAMEFOIL BEAUVAN** . . . A handsome simulated leather in many colors and grains, that is completely flameproof. It is a "safety feature" in modern upholstery, table tops, decorations, seat cushions, in bars, lounges, restaurants and public rooms.

**FLAMECOTE CANVAS FINISH** . . . An easy to apply preparation that makes ordinary canvas flameproof, mildewproof, water and weather resistant . . . adds months of extra wear. Comes in nine eye-appealing colors and white, in one quart, one and five gallon containers.

*Manufactured under Patents Nos. 2,044,176 and 2,299,612. Others Pending.

FLAMEFOIL PRODUCTS
PHILADELPHIA TEXTILE FINISHERS
INCORPORATED
NORRISTOWN PENNSYLVANIA
Makers of: Flamefoil Canvas • Flamefoil Fabrix • Flamefoil Beauvan and Flamecote Canvas Finish

# An important addition to the Monmouth chassis parts line



## KNEE ACTION COIL SPRINGS

Monmouth Knee Action Coil Springs are now available for replacement. Nineteen numbers—covering all popular applications are now or soon will be in stock at your N.A.P.A. Warehouse. Material, workmanship and operating characteristics of these springs are in every respect equal to original springs. For replacement, specify Monmouth Chassis Parts. Inquiries will receive prompt attention.

**MONMOUTH PRODUCTS COMPANY**
**CLEVELAND, OHIO, U.S.A.**

*Your NAPA Jobber is a Good Man to Know!*

NAPA Assurance of Quality

**FOR ENGINE BEARINGS**
**CLUTCH PLATES AND PARTS**
**CHASSIS PARTS**

Monmouth Trade Mark *is the name*

## Unit Records Out

(CONTINUED FROM PAGE 45)

of its performance. Otherwise, since all the tires are of the same manufacture, total cost is sufficient.

Any abnormal increase in tire costs would be reflected in the cost analysis just as quickly as if individual records had been kept.

It is realized, of course, that defective tires which may show up are replaced by the manufacturer, and these tires, when removed by our maintenance department, are put through for adjustment. Elimination of individual tire records has not resulted in any relaxation of careful examinations and proper care. Tire stock or inventory records have not been eliminated.

### Tractor Records on Way

WHILE elimination of individual tire records has saved us $50 a month, elimination of individual tractor and engine records will save at least $150 a month, making a total of $200 monthly, plus whatever saving has resulted from elimination of individual trailer records.

Thus we have a minimum saving of $2400 annually.

Our monthly cost analysis system gives us our cost per mile, and our cost per one hundred pounds of freight. In this cost figure we have driver's salaries, cost of parts, maintenance salaries, new equipment and everything that enters into the cost. These figures are real because they represent actual money outlay. This outlay would be the same even if we spent the $200 a month to keep individual records on equipment.

When this cost figure gets out of line with our previous records we immediately start looking for the reason for this increase in cost.

Our operating cost last year per ton-mile, despite high wages and the high cost of everything that goes into the operation, was lower than it has ever been in the history of the company.

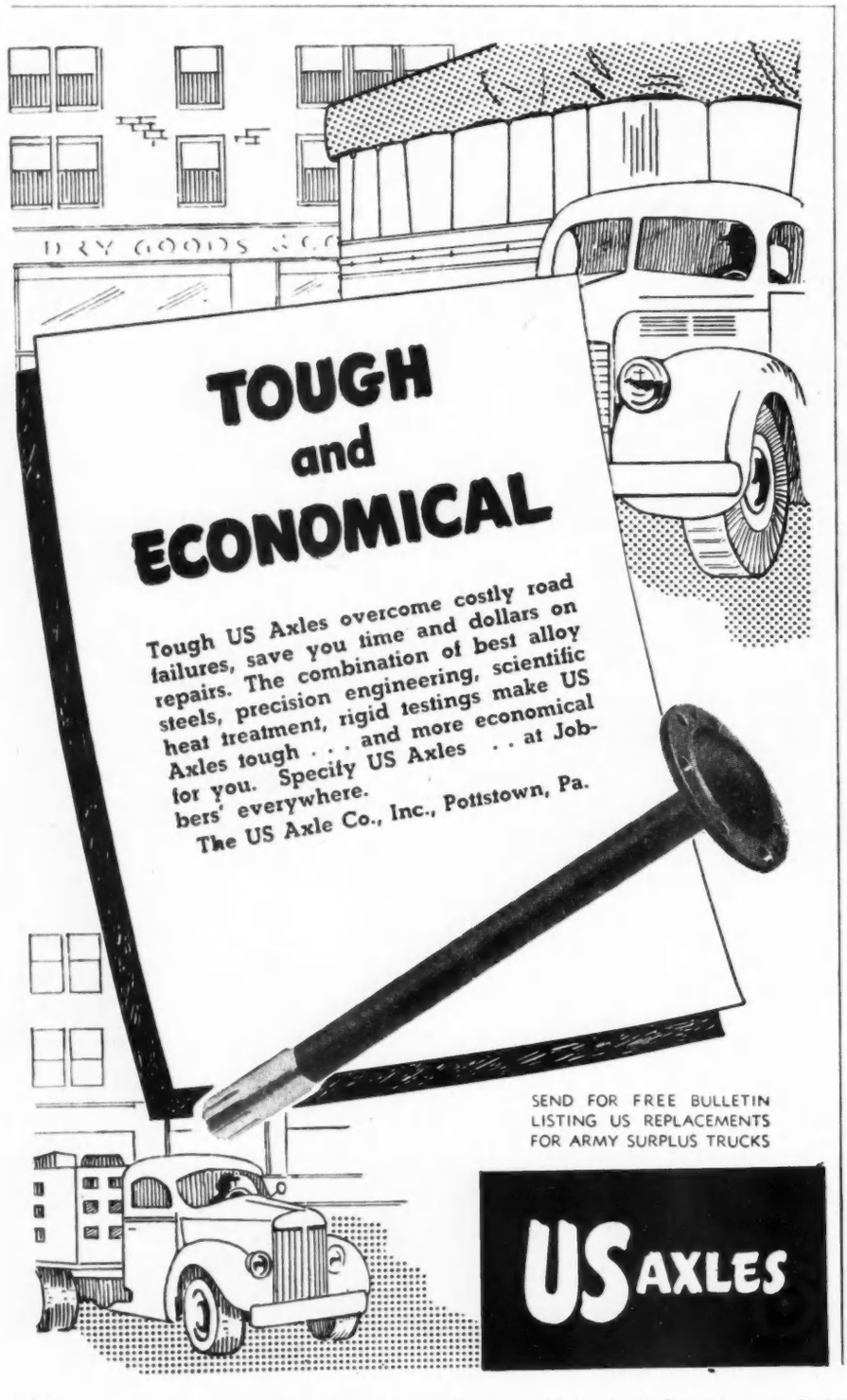
If the cost analysis system will give you excessive costs it will also give you reasons for lower costs. In this case favorable changes in laws regulating vehicle weights and freight rates in some of our territories and the use of tandem trailers with heavier loads, resulted in lower costs. The records further disclose that our new equipment is saving us money and gave us proof that our decision to standardize on certain products was sound.

We found, too, that being larger and having more resources we had been able to save considerable cost by taking advantage of quantity discounts, discounting bills and any other discounts that were available, some of which we were unable to take when we were smaller.

### Terminal Costs Vary

OUR terminal managers are paid a base salary and a percentage based on the profit their terminal makes. Our cost analysis system gives the cost per hundred pounds at each terminal. These figures vary considerably. Chicago's 100-pound cost is 14½ cents; Memphis 10 cents, while Peoria is 7 cents and our headquarters cost here in Cape Girardeau is 6½ cents. This last figure is low

(TURN TO PAGE 146, PLEASE)



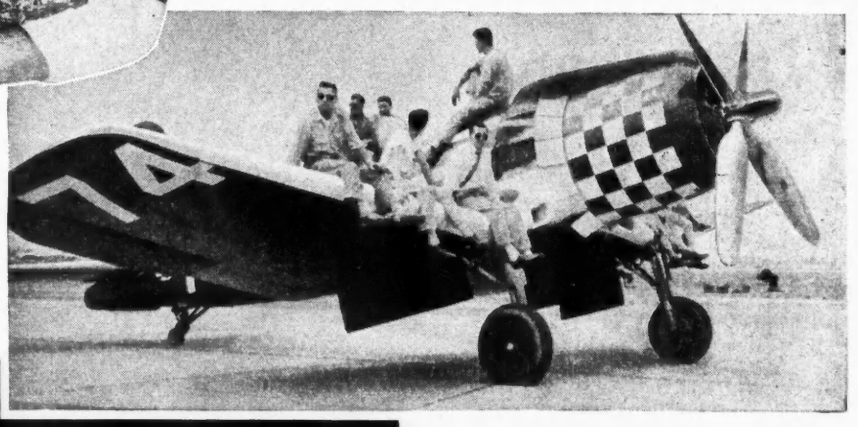
Cook Cleland, World War II Navy Ace, and the Thompson Trophy which he won in the 13th Thompson Trophy Race for piston engine planes.

# 1947 Thompson Trophy WINNERS

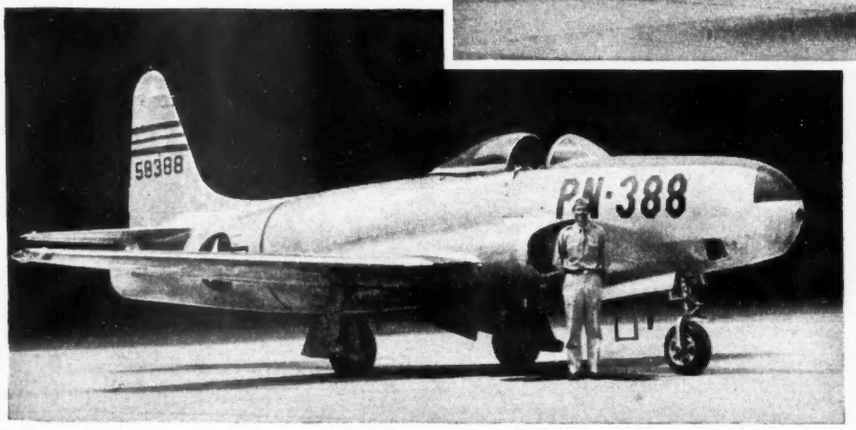
★

**NATIONAL AIR RACES**
**CLEVELAND, OHIO**
**SEPTEMBER 1ST**

The checkered Flag—signal of victory and a new world speed record for closed-course flying in the 1947 Thompson Trophy Race.



Cleland's "Corsair", a stripped-down Navy fighter, set a new world's closed-course speed record for piston engine planes. The 3500 h.p. 28-cylinder Pratt & Whitney "Wasp Major" engine whipped the plane around the 15-mile course twenty times at an average speed of 396.13 m.p.h. Cleland's share of the $42,000.00 prize purse was $19,500.00. Photo shows ground crew.




This Army Air Force P-80 fighter was winner of the Thompson Trophy Race for jet-powered planes. Piloted by Lieut. Com. Robert L. Petit, it averaged 500.70 m.p.h. on its eight laps of a 22.5-mile course. It was equipped with an Allison J-33 turbo-jet engine. Since the war the Thompson Trophy Race has been flown in two divisions, one for piston engine and the other for jet-powered planes. Duplicate Thompson Trophies went to both winners.

SINCE 1930, EACH THOMPSON TROPHY RACE, demanding the utmost "pylon polishing" skill over a closed course, has provided aviation's most gruelling test of speed combined with maneuverability. Beyond the thrills and chills of this spectacular climaxing event of the world's greatest air show is a serious purpose—to encourage the development of faster, safer planes that will hold America's commercial and military leadership in the air.

## Thompson Products, Inc.

**CLEVELAND • DETROIT • LOS ANGELES • ST. CATHARINES, CANADA**

**Precision Parts for Automobiles and Airplanes; Manufacturers of the famous Thompson Sodium-Cooled Aircraft and Automotive Valves; Builders of Vanes, Blades and Assemblies for Jet Propulsion Engines.**

## Unit Records Out

(CONTINUED FROM PAGE 144)

because our headquarters is located in the middle of the system and is not an important freight terminal. Most of the loads go through and there is little rehandling and no need for the large space and crews that are necessary in Chicago, Memphis, Little Rock and St. Louis.

We operated 3,685,000 miles in 1946 at an average road expense over the entire system of 15 cents per 100 lb.

We operate 80 trailers at the present time and 60 of them are new tandems. The remaining 20 will be replaced with new equipment as fast as conditions permit and it becomes economically sound.

Our central shop is located in Cape Girardeau, Mo., where we employ 33 men in the maintenance operation. We have our own repair shops, paint shops, body shops. New buildings have been planned for the maintenance operation and for the freight terminal.

A new terminal has recently been completed in Little Rock at a cost of $68,000. It has no shop. We have a new terminal and small shop operated by five men in Memphis which cost $150,000.

Our fleet of tractors is composed of two makes and our records show exactly what each unit cost us by the year and for its life. If we eliminate individual tractor records we will still have important cost figures going into the cost analysis, such as total maintenance cost, total purchase price, and total mileage.

In recording the figures for the two different makes of tractors in our fleet, we had no particular idea of comparing the cost of one make with that of another make, but mostly to find out what a certain type of a certain make costs us per mile over its lifetime.

When new models are put into the fleet, with new efficiency and new power ratings, we expect to keep individual records on these tractors. even though the individual record for the fleet has been discarded. If this individual record indicates that the tractor should remain in the fleet and that it should be used to replace other worn tractors, it will be seen that in time we would again have a fleet composed of two makes on which individual records would be totally unnecessary.

### COE's One Cent Higher

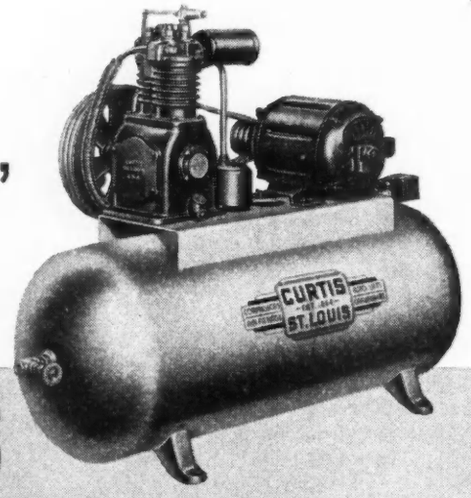
OUR cost analysis figures disclosed, too, that cab-over-engine tractors cost us one cent more per mile to keep up and we think this may be due to the time consumed in getting to the engine and the difficulty in

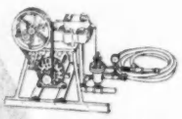
(TURN TO PAGE 149, PLEASE)


"Positive Lubrication"

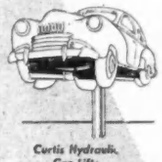
*Another Long-Life Feature of*

CURTIS AIR COMPRESSORS



Curtis Hydraulic Car Washers



Curtis Hydraulic Car Lifts

The patented Centro-Ring self-oiling system with only one moving part assures proper lubrication at all times; uses less oil than ordinary splash oiling systems, contributes to the exceptionally long life of every Curtis Compressor. Other Curtis advantages include:

- Timken Bearings
- Automatic unloading starter
- Automatic welded electric tank
- Dust-proof enclosed compressor
- Precision construction throughout

Write for Bulletin C-6 for full information on Curtis Air Compressors, Hydraulic Car Washers and Full Hydraulic Auto Lifts.

CURTIS PNEUMATIC MACHINERY DIVISION
of Curtis Manufacturing Company
1970 Kienlen Avenue, St. Louis 20, Missouri

*93 Years of Precision Manufacturing*

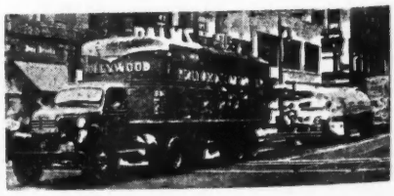
F568A

CURTIS PNEUMATIC MACHINERY DIVISION of Curtis Manufacturing Co.
1970 Kienlen Ave., St. Louis 20, Missouri

Please send me complete information on Curtis Air Compressors, Auto Lifts, and Car Washers.

Name.....
Firm.....
Address.....
City..... Zone..... State.....


### Roadeo Parade



**Fruehauf gravity suspension tandem trailer pulled by Dodge tractor led off 100-vehicle parade in Detroit in preliminary to recent Michigan Roadeo**

## Unit Records Out

(CONTINUED FROM PAGE 146)

servicing these units. Manufacturers might study this extra cost.

Here are some representative figures: Tractor A cost us .071 per mile in 1943, .98 in 1944, .115 in 1945, .119 in 1946, and over its life to date, .083 per mile. Tractor B for the same period cost .101, .097, .115 and over its life, .105. Tractor C, a COE, cost .095 in 1943, .106 in 1944, .125 in 1946 and .102 over its life, while Tractor D cost .115 over its life.

Tractor E operated for .098, .106, .126, .140, and a lifetime average of .102. Tractor F, on which we have no figures except in 1946, operated that year for .104. Tractor G operated for .101, .102, .116, and a life of .114.

These figures include the pay of the drivers which was 4½ cents per mile in 1946. Pay of drivers has been going up constantly.

If we know that Tractor B will cost us a fraction over 10 cents per mile for its entire life and that Tractor F will cost us a little over 10 cents a mile for its life, then why should we hire a lot of people and spend a lot of money keeping individual records of each tractor?

Any time major changes are made in our setup it may indicate the need for a new permanent or temporary record. The system is entirely flexible and so designed to give us adequate records but not too much.

Any let down in maintenance or reduced PM will be reflected immediately in our cost analysis. It uses all the expense figures from the cost of water used to wash tractors and trailers to the telephone bill, salaries and incidentals. This is a true cost.

If the parts inventory should start increasing, or mileage costs go up and labor costs down, it would be a simple matter to find the exact cause.

Thus elimination of a multiplicity of individual records, elaborate charts and graphs, in no way affects the total costs and the total mileage records, or individual mileage records.

*END*

*(Please resume your reading on P. 46)*



*For Deep Sea Diving*
*You Need Special Diving Equipment*

**YOUR CARS AND TRUCKS NEED**

**PURITAN *Super 60* BRAKE FLUID**

The heavy duty service of commercial cars and trucks is as different from pleasure car service as a deep sea diver is from an exhibition diver. That's why Puritan developed its Super 60 Hydraulic Brake Fluid especially for heavy duty service.

BOILING POINT 370°F: No danger of brake failure due to vaporization.

POUR POINT 60°F BELOW ZERO: Remains free flowing and mobile even in Arctic weather.

NON-GUMMING AND NON-OXIDIZING: Has a special base that does not gum or oxidize under any operating conditions.

MOISTURE ABSORPTION: Capable of absorbing all moisture of condensation — thus protecting wheel cylinders and metal parts against corrosion.

INERT TO RUBBER: Does not cause rubber cups to swell or deteriorate.

MISCIBLE: Mixes with all other brake fluids. Safe to add to any hydraulic brake system.

Make sure your cars are equipped with Puritan Super 60 heavy duty Brake Fluid, and cut down on your brake system maintenance cost. And for those periodic brake system bleeding and cleaning jobs, there's nothing faster and more effective than Puritan Hydraulic Brake Flushing Fluid. Get both from your NAPA jobber.

PURITAN COMPANY, INC.
ROCHESTER 6, NEW YORK
HYDRAULIC BRAKE FLUID AND FLUSHING FLUID • GASKA-SEAL NO. 1, 2 AND 3
SHOCK AND KNEE-ACTION OIL

NAPA Assurance of Quality

## New Products

(CONTINUED FROM PAGE 63)

the use of fuel, producing the equivalent of 100 lb of ice for each gallon of fuel. This is mainly due to the engine being automatically controlled to a speed required by temperature conditions and constant running. There are no cycles of freezing and thawing as with intermittent operation. Humidity and tempefature are constant so do not dry out load. When not overloaded, this model will maintain a temperature of zero to 10 deg below inside with 110 deg outside temperature.

***Use Free Postcard for More Details.***

### P116. 12-Ton Press

A 12-ton press for straightening wheels, hubs and drums is now being offered to the garage trade by Wheel Service Equipment Corp., Detroit, Mich.

It is claimed that the "Tripp" press straightens hubs and drums as well as wheels and dissembles and assembles hub and drum assemblies.

One of its outstanding features is ease of operation, making it possible to do the straightening job in shorter time, at lower operating cost, the company states.

***Use Free Postcard for More Details.***

### P117. Lubricator

A new high pressure lubricator is announced by Industrial Machine and Supply Co., Pittsburgh, Pa.

Known as the SL-104 High Pressure Chassis Lubricator, it is equipped with an air-operated double-acting pump which builds up a 50 to 1 pressure ratio. Because it pumps grease on both the up and down strokes, the grease flow is constant and it is impossible for any air pockets to form in the line.

The SL-104 lubricator can be used with 400, 100, and 25 lb. original refinery drums.

***Use Free Postcard for More Details.***




### P118. G3 Grinder

A new offhand or freehand grinder featuring individual arbor mounted wheels and a triple speed selection is announced by the Corlett-Turner Co., Chicago, Ill. It has been especially designed for small tool grinding jobs.

Each grinding wheel is mounted on a ground tapered arbor which fits into a hardened and ground socket in the spindle. The mounted wheel can be changed in a matter of seconds, and no tool is needed to make this change.

The new G3 grinder incorporates a three-speed pulley arrangement which permits the selection of the right spindle speed for any vitrified wheel from 1 in. to 4 in. in diameter. The collet has a capacity of ¼ in. and increases the range of usefulness of this machine. All types of mounted wheels and tools such as rotary files, drills, countersinks, etc., can be used on this high speed spindle.

***Use Free Postcard for More Details.***

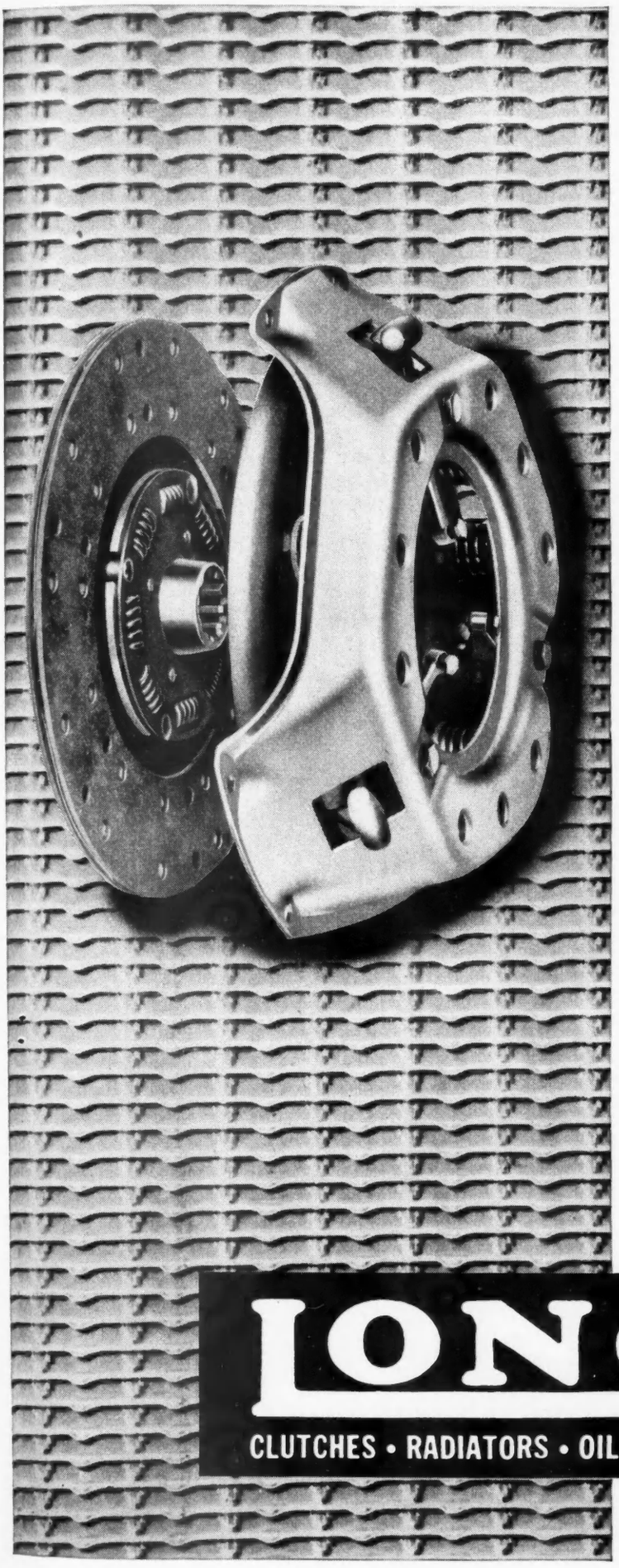
### P119. New Record System

**Remington Rand, Inc., New York, announces two new record systems for fleet operators' cost control. The first is a basic, complete Motor Vehicle Record on three cards filed visibly in one Kardex pocket. The visible margins index each unit of the fleet and chart the cost in cents per mile operated by using a Graph-A-Matic Control Signal. The three cards are (1) a complete vehicle history and depreciation record; (2) an overriding sheet—motor vehicle maintenance work sheet; and (3) a motor vehicle maintenance summary.**

**Supplementing this record for long haul operators is a Per Ton Mile Cost Record which charts the per ton mile cost for each vehicle of the fleet by a Graph-A-Matic Control Signal set over a cents scale. This record indexes each truck and provides space for a complete analysis of each "drop" cost. Alternatively, many truck operators find a Tonnage—Route & Cost Record—by Truck record more advantageous. This provides a means of compiling information required for I. C. C. reports and gives complete statistics on costs and revenues by days, charting the percentage of payloads on the visible margin.**

***Use Free Postcard for More Details.***

(TURN TO PAGE 152, PLEASE)



# Easy Does It!

**You call on your clutch at every major change of speed or direction. Tight-squeeze parking at the curb... throttle-jockeying in heavy traffic. In stop-and-go driving or rolling on the open road, it helps a lot when "easy does it!"**

**Long clutches respond instantly to light pedal-pressure. Since 1922, they've made it easier to drive millions of cars, trucks, buses and tractors.**

**LONG MANUFACTURING DIVISION**
**BORG-WARNER CORPORATION**
**Detroit 12, and Windsor, Ontario**

# LONG

**CLUTCHES • RADIATORS • OIL COOLERS**

ENGINEERING B-W PRODUCTION

A PRODUCT OF BORG-WARNER

## New Products

(CONTINUED FROM PAGE 150)

### P120. Innertube

The new, improved Waber innertube is guaranteed not to go flat within two years from the date of purchase due to road accidents such as cuts, punctures, rim pinches and blowouts.

Developed by The Waber Co., Chicago, the new patented principle is said to prevent displacement of sealing material by high speed.

***Use Free Postcard For More Details.***

### P121. New Stop Lamp

Brilliance, readability and easy bracketing at any angle are some of the characteristics of the new "Stop King" stop lamp announced by The Teleoptic Co., Racine, Wis.

The "Stop King" is designed to provide greater protection against the hazards of increasingly congested traffic of streets and highways. It is easily applicable to all passenger cars, buses, trucks, commercial vehicles of all types. With its universal mounting bracket, it can be turned or set at any most effective position. The bracket is of extra strong construction, vibration proof.

Lens is of heat-treated railway signal glass, of solid color, transmitting a warning light easily readable day or night. If flashing action is desired, the Teleoptic "Tell-tale" flasher unit is supplied as an extra.

The lamp is equipped with the Teleoptic ribbed reflector and red lens; rust-proof retainer ring; heavy brass lens attaching screw. It is easy to change lens or bulb.

***Use Free Postcard for More Details.***

### P122. Truck Tires

Production of two new sizes of truck tires is announced by The B. F. Goodrich Co. They are the 7.50-20 ten-ply Universal, and the 14.00-24 twenty-ply Rock Quarry casing.

The Universal tire is widely used by loggers operating small trucks and in quarry and gravel pits, as well as a few shuttle cars in underground mines.

The Rock Quarry casing has a smooth tread, and is specially designed for quarry operators and various mining uses where cutting has been a problem.

***Use Free Postcard For More Details.***

### P123. Improved Hammer

An improvement has been made in the Kant-Mar hammer, one of a line of Schmidgall Products, Peoria, Ill.

Tips of the Kant-Mar are made of a precision turned special aluminum alloy called "Velv-Alum," easily replaceable after hard wear. Velv-Alum is a new material sufficiently tough to take the punishment in such jobs as in garages, machine shops, foundries, yet is soft enough so as not to mar the most delicate surface encountered in the tool room on dies, etc. Velv-Alum also reduces the chance of eye injury due to chipping.

The Kant-Mar is made in two sizes, for light and heavy duty: 8 and 32 oz, in a plain model (non-replaceable tips), and in the same sizes in a model with replaceable tips. Additional 8 and 32 oz tips may be obtained separately.

***Use Free Postcard for More Details.***

### P124. Hand Drill

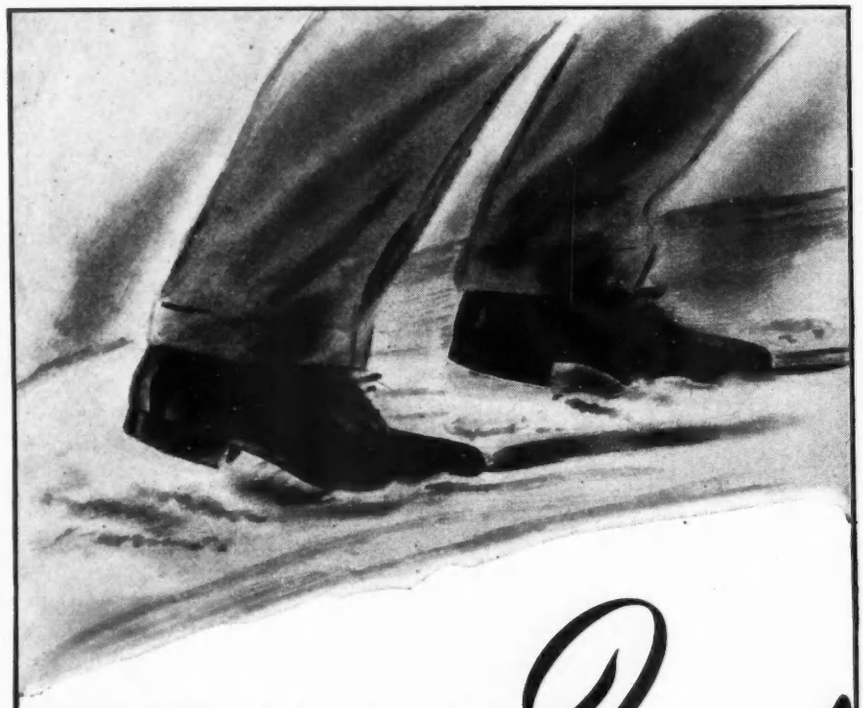
The new AristoCraft ¼-in. Standard Duty Drill manufactured by Aristo Power Tools, Inc., Chicago, is light in weight, only 3¾ lb.

A universal motor assures ample capacity for drilling steel up to ¼ in. thick and hard wood up to ½ in. thick. Permanently sealed ball bearings are mounted on all moving shafts. The helical gears are cut from quality steel, and run smoothly under load. The 2-pole trigger switch has a positive lock, for continuous operation when desired.

Furnished as standard equipment with the Model D8 drill are a ¼-in. capacity 3-jaw Jacobs chuck and key, and a 15-ft 3-conductor rubber-covered cord with unbreakable connector. The standard drill is for 110-volt current . . . but will be supplied for 220 and other voltages when specified at no additional cost.

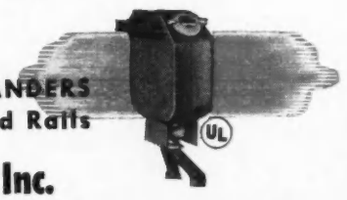
***Use Free Postcard For More Details***

(TURN TO PAGE 154, PLEASE)

TRACTION *Zero!*

RAIN, Sleet, Snow or Ice often reduce Traction to Zero. At such times Truck and Bus drivers are forced to slow-down, stop, or take a chance. No matter what the drivers may do, time is wasted, schedules are "shot", and operating expenses go up. There is one positive way to beat this condition, that is, by installing and using Elston Electric Sanders to provide your own Traction when needed. *Your Supplier Has Them.*



ELSTON ELECTRIC SANDERS
for Trucks, Buses and Rails

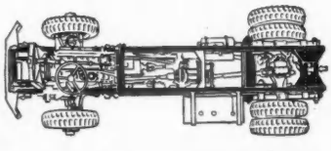
**Highway Safety Appliances, Inc.**

1381 MARSHALL AVENUE, ST. PAUL 4, MINNESOTA . . .

47-06

# Giving A PARISH Frame Its *"Spring-back"*

**PARISH**
**Heat-Treated Frame**



*The Keel of the Chassis*

The Heat-treating of the side rail of a PARISH Pressed Steel frame, as shown in the above illustration, is accomplished by the use of automatically controlled heat-treating furnaces 40 feet long. Each heat is supervised by a metallurgist and, from annealing to tempering, there is no interruption or delay.

Made of special steel and alloys and formed by presses that have a capacity of 3,000 tons PARISH Heat-treated frames have a strength value 125% greater than steels commonly used and will hold the parts attached to them in correct position while a rough road underneath and a heavy load above try to bend, wrench, shake and twist them out of shape.

This punishment while the frame is in service goes on for years. How many years depends on the design and fabrication of the frame. PARISH frames last from 2 to 5 years longer than the usual type of frame.

When buying new trucks and trailers or replacing worn-out frames, you can insure longer, trouble-free operation by specifying PARISH Heat-treated frames—the frames with the "Spring-back"—the "keel of the Chassis."

**PRESSED STEEL HEAT-TREATED FRAMES FOR TRUCKS AND TRAILERS**

**PARISH PRESSED STEEL CO.** *Subsidiary of* **DANA CORP.**
**READING, PA.**

*Western Representative: F. Somers Peterson, 57 California St., San Francisco, Cal.*

## New Products

(CONTINUED FROM PAGE 152)

### P125. Tire Cement

A new vulcanizing cement especially for use in repairing rayon-cord tires has been developed by United States Rubber Co.

Developed to produce the best possible bond between rayon and rubber, the cement is said to result in a stronger, better repair. Company engineers report that its high degree of penetration provides a better mechanical anchorage to the rayon-cord as well as to the rubber between the cords.

Because of its greater strength and heat-resisting qualities, it is also said to be ideal for cotton and nylon-cord tires.

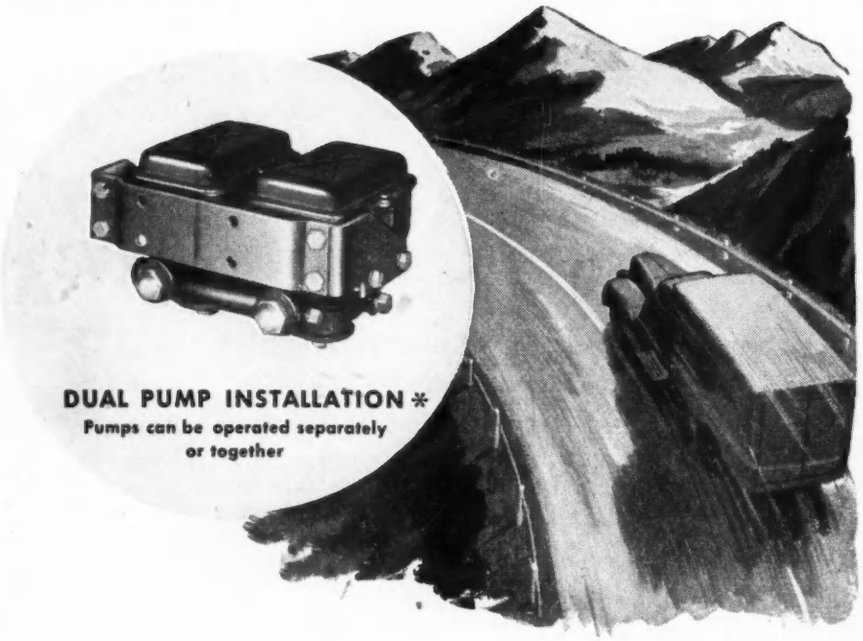
***Use Free Postcard For More Details.***

### P126. Pedal Depressor

A handy tool for depressing a car or truck brake pedal during brake and alinement inspections has been announced by the Bear Mfg. Co. of Rock Island, Ill. The lower end is clamped against the brake pedal and the upper against the seat, and the brake pedal is held down during king pin inclination and caster checks as well as brake cylinder inspections.

***Use Free Postcard for More Details.***


KEEPS 'EM ROLLING...
KEEPS 'EM CLIMBING




- Ends vapor-lock
- Operates only when needed.
- Insures quick starting in any weather.
- Reduces operating costs.
- Available for 6 or 12 volt installations.

* SINGLE UNIT ALSO AVAILABLE.

*Stewart-Warner Corporation, 1876 Diversey Parkway, Chicago 14, Illinois*

STEWART-WARNER
Electric Fuel Pump


### P127. New Pallet

A new eight-way all-steel pallet in a single size, 40 x 48 in., has been announced by the Monroe Auto Equipment Co., Monroe, Mich.

The new pallet is designed to permit the forks of a lift or pallet truck to be slipped between the top and bottom sections from eight different directions, four sides and four corners. Constructed of high tensile steel for saving in weight and added strength, the pallet resists corrosion and does not hold odors.

The company is offering the pallet in two weights—a 69 lb unit for a single load up to 2500 lb or a tiered load up to 15,000 lb, and a 96 lb unit for a single load up to 6000 lb or a tiered load up to 25,000 lb.

***Use Free Postcard for More Details.***

### P128. Improved Battery

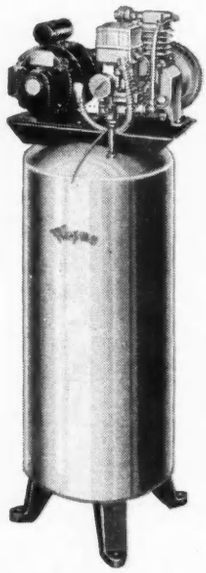
Thomas A. Edison, Inc., announces a completely new battery line-up featuring the new "Extra Heavy Duty" battery for passenger cars, commercial vehicles and tractors.

Equipped with "Endurite" separators, hard rubber cases, extra-electrolyte capacity, "Safety Vent" covers and many other features the new Edison battery is said to give 50 per cent longer life in normal use with less battery servicing.

***Use Free Postcard For More Details.***

### P129. Air Compressor

The Wayne Pump Co., Fort Wayne, Ind., has announced a new F Series of smaller air compressors, 1/3, ½ and ¾ hp single stage with capacities ranging from 1.5 to 3.5 cfm. New requirements have been incorporated, resulting in higher efficiencies and longer life, the company states.



The compressor has an unusually large piston, 2¼ in. size, which permits operation at slower speed. These tank-mounted compressors are complete with check valve, safety valve, pressure control switch, tank drain, and other controls for completely automatic operation.

***Use Free Postcard for More Details.***

### P130. Cleaning Compound

A new compound for cleaning radiators and cooling systems is announced by F. E. Brady Products, Inc., Muncie, Ind. The compound dissolves rust-scale and emulsifies grease at the same time—holding this material suspended in the water for easy removal from the cooling system, according to the company.

The Brady Compound combines a very mild acid with a foaming and wetting agent which is stable in the presence of acid. The acid, reportedly non-injurious to any metal, dissolves rust and scale, and the foaming and wetting agent emulsifies sludge and gum formed by anti-freeze solutions.

***Use Free Postcard For More Details.***

## P131. DC Welder

A new Flexarc lightweight engine-driven DC welder, designed for 200 amp. at 30 volts on the basis of 50 per cent duty cycle, is available from Westinghouse Electric Corp. Each welder comes with accessories complete ready to weld including work and electrode leads, helmet, electrode holder, a liberal supply of electrodes and a wire scratch brush.

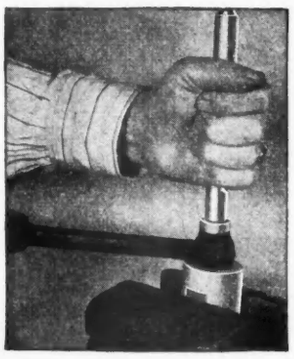
"The Ranger" can be towed anywhere. The design characteristics of the generator provide easy striking and maintenance of the arc for shop quality welding on steel, cast iron, alloys, hard surfacing aluminum and brass.

The generator is direct-connected to a Hercules IXB engine. The welding current is adjusted over a wide range from 30 amp. at 20 volts to 250 amp. at 30 volts in four major steps by plugging screw locking plugs on work and electrode leads. Intermediate values of current are obtained by rheostat control. Polarity is positively controlled by interchanging work or electrode lead connections. Available either as a portable or stationary model.

***Use Free Postcard for More Details.***

## P132. Bushing Jig

This formerly troublesome job can now be done easily and without damage with the new OTC Ford con rod bushing driver set 812-V. It consists of an anvil and two special bushing collars.



The anvil No. 812 is held in a vise to provide a rest for the con rod. One bushing collar, No. 812-A, is provided to remove the worn bushing and the other, No. 812-B, is furnished to install the new bushing. These collars must be used with OTC driver mandrel No. 813 which is sold separately or in set No. 818.

***Use Free Postcard For More Details.***

## P133. Hand Cream

The new skin cream, Cadet Hand-saver, manufactured by Cadet Laboratories, Inc., Worcester, Mass., is now available to consumers. Hand-saver guards hands against dangerous caustics, irritants and grimy materials.

When applied to the hands, this skin cream forms a comfortable, cellophane-like film on the skin that guards against inflamation, irritation and infection caused by most skin irritants. It is made of pure, emulsified fats and oils and is absolutely harmless to the most sensitive skin, according to the company.

***Use Free Postcard for More Details.***

## P134. Snow Plow Wax

A new liquid snow plow wax reputed to make snow removal faster and easier, is announced by Pennsylvania Refining Co., Cleveland, Ohio.

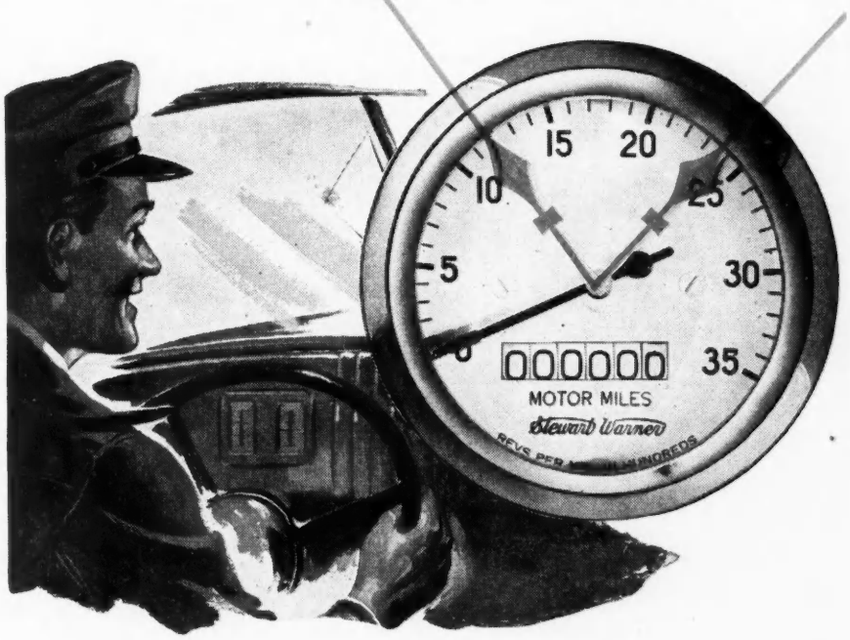
Marketed under the trade name of Penn Drake Snow Plow Wax, the material is easily applied to moldboards, blades and wings. It immediately creates a hard, slick surface off which even the wettest snow slides easily. Because it prevents the piling up of snow, it helps to eliminate costly delays necessary for "clearing" or breakdowns from overloading.

***Use Free Postcard For More Details.***

***END***

***(Please resume your reading on P. 64)***


# SAVES UP TO 25% ON FUEL AND OIL!




GIVE your driver this easy, visual check to help him keep within the Economy Range . . . those engine speeds at which a truck operates with peak efficiency and economy.

He just keeps his engine speeds between two stationary red pointers on the face of the tachometer dial . . . reducing fuel consumption and increasing the life of the truck.

Stewart-Warner's Motor Mile Tachometer also records all engine revolutions—whether idling or traveling—providing an accurate record of motor mileage to show when engine re-service is needed . . . reducing maintenance costs up to 25%.

Write today for complete details and prices. Stewart-Warner Corporation, 1876 Diversey Parkway, Chicago 14, Illinois.

# STEWART-WARNER
## Motor-Mile Tachometer

HOOT MON!

More Economical in the Long Run!

McKAY Multi-Grip TIRE CHAINS

McKAY MULTI-GRIP LINKS

Double traction bars on every gripping link increase efficiency, give more traction area, make chains last longer.

Easy to Put On... Hard to Wear Out!

•EXTRA MILEAGE
•ADDED TRACTION
•EASIER APPLICATION

Proved best on the streets and highways of America! Built for rugged performance. For safer driving on ice and snow, always be sure your vehicle is equipped with McKay *Multi-Grip* Tire Chains.

DISTRIBUTED BY BETTER JOBBERS EVERYWHERE

THE McKAY COMPANY PITTSBURGH 22, PA.

WELDING ELECTRODES . . . COMMERCIAL CHAINS . . . TIRE CHAINS

465 McKAY BUILDING • PITTSBURGH 22, PA.

## Detroit Dispatch

(CONTINUED FROM PAGE 57)

ready are using the one-piece construction to carry out fender lines which sweep in an unbroken line from front to rear. While the styling effect of this treatment is delightful to the eye, some critical observers are slightly less than enthusiastic about its practical economy. They point out that repair costs are bound to be high with so much sheet metal exposed to the tender mercies of traffic and that instead of replacing a smashed-up fender, it will be necessary either to have the sheet metal patched, welded, filled or otherwise repaired, or to have the entire large panel replaced. They think that insurance costs for collision protection are going to increase when that style of body becomes more generally adopted.

### '48 FORD PREVIEW

District trucks and fleet managers from the 33 districts of Ford Motor Company were given their first view of the new 1948 line of Ford trucks at a week-long meeting in Dearborn, beginning Sept. 15. Ford's six regional truck and fleet managers attended.

At sessions in the Dearborn Inn and at the nearby Ford engineering tests track, the truck and fleet managers were addressed by J. R. Davis, vice-president in charge of sales and advertising; W. A. Williams, general sales manager; J. D. Ball, director, and D. W. Lee, assistant director of the truck and fleet sales department; W. E. Kimbrough, supervisor of the truck sales section and S. M. Copland, supervisor of the fleet sales section.

Although plans for introducing the 1948 model Ford trucks were discussed and the new extra heavy Series F-7 and F-8 models were demonstrated, no details were made public.

*END*

***(Please resume your reading on P. 58)***

## Brake Clinic

**Painted bright yellow, red and black this Puritan Co. truck carries educational equipment for use in the company's extensive hydraulic brake clinics now being held with the cooperation of APA jobbers throughout the eastern states. Equipment includes a model brake system in glass through which the working of each part may be seen. The clinics are open to all fleet mechanics**

# When you're glad you have a Snap-on

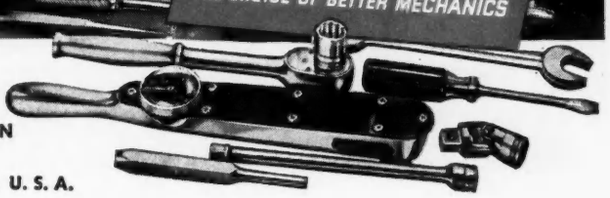
## A few hammer blows remove the tightest hub when you use a Snap-on UNIVERSAL WHEEL PULLER

Because interchangeable jaws adapt it to all demountable wheel hubs, including Ford cars, there is just ONE Snap-on Universal Wheel Puller Set to buy.

The patented pressure screw drive is known to be the fastest, safest, and most efficient method of pulling any hub. The interchangeable jaws pivot and swing around the housing flange to any desired bolt circle and provide a direct leverage regardless of their working angle.

Available through Snap-on's nation-wide, direct-to-user tool service. Ask your "Snap-on Man" for a demonstration when he calls.

Snap-on Tools
THE CHOICE OF BETTER MECHANICS



**SNAP-ON TOOLS CORPORATION**
8026-J 28th AVENUE • KENOSHA, WISCONSIN

International Division: Kenosha, Wisconsin, U. S. A.

# FLEETMAN'S LIBRARY

**A Review of Booklets and Catalogs Fleetmen Will Find Helpful**

SAFETY SUPERVISION IN MOTOR VEHICLE FLEETS, a 230-page book designed to promote and expedite the teaching of safe operation of motor vehicle fleets, published by the National Conservation Bureau, accident prevention division of the Association of Casualty and Surety Companies. Edited by Milton D. Kramer, the book is a comprehensive practical treatment of activities relating to driven selection, testing, training and supervision. Copies may be obtained through the offices of the National Conservation Bureau, 60 John St., New York City, at $2.25.

COMPRESSED AIR HANDBOOK, a 400-page edition valuable as a reference text on applications, installations, operation and maintenance of compressing equipment and air-powered tools of all types. Containing 247 illustrations the publication includes all of the standard reference material formerly published as "Trade Standards," and will provide reference data for technical and engineering needs, as well as information for the laymen on the versatility, flexibility and utility of modern compressed air power. Published by Compressed Air and Gas Institute, New York, N. Y. Price $3 per copy.

WIRE AND CABLE SPECIFICATION CATALOG, prepared by The Electric Auto-Lite Co. and listing complete car and truck wire and cable specifications for all makes from 1932 through 1947. It also includes a complete description of the entire Auto-Lite line of wire and cable from spark plug wire to garage lights.

QUESTION AND ANSWER BOOKLET, compiled originally as an aid to drivers competing in the National Truck Driving Roadeo, the publication contains answers to 264 questions on safe driving rules, first and trucking industry in general. Copies of the booklet, Things the Professional Driver Should Know, are available at cost from American Trucking Associations, Inc., 1424 16th St., N. W., Washington 6, D. C.

CLEAN OIL, VOL. 111, No. 2, published by Honan-Crane Corp., subsidiary of Houdaille-Hershey Corp., shows the economic value of oil purification in relation to increasing costs of finding and developing new oil fields. Available upon request from the company at 630 Wabash Ave., Lebanon, Ind.

BLACKHAWK WRENCH CATALOG, No. 247, a 36-page publication picturing and describing 16 new assortments and 134 wrenches added since 1943. Write Blackhawk Mfg. Co., Milwaukee 1, Wis.

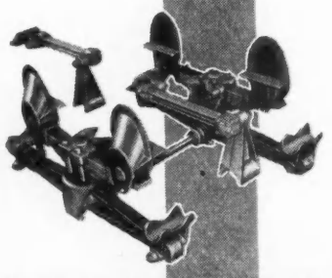
(TURN TO PAGE 160, PLEASE)


Davisbilt 5 compartment, 5500 gallon transport.

FOR PLUS VALUES

DAVISBILT

uses suspension by Hendrickson



HENDRICKSON TANDEM

HENDRICKSON MOTOR TRUCK CO.

CHICAGO 15, ILLINOIS

"Follow the Leader"



**What makes you think you'd make a good butcher?**

# To help you keep old fleet units on the job

Today, high cost of repairs and shortage of parts and equipment make it doubly important to use the best motor oil — to gauge drainage periods carefully. That's why so many fleet operators not only use Valvoline Motor Oil for greater protection but also send drainage samples to Valvoline "Fleet Lab" for regular checkups.

Valvoline Laboratory men know practical maintenance as well as engineering and chemistry. They can often detect trouble spots almost impossible to discover in the shop. Perhaps they can save *your* fleet from costly breakdowns and lay-ups.

**Hundreds of fleets, large and small, depend on Valvoline "Fleet Lab" for advice. Ask your Valvoline man how this service can be obtained free—or write**

**VALVOLINE**

**FLEET CONTROL LABORATORY SERVICE**

**FREEDOM-VALVOLINE OIL COMPANY**

Dept. 41J Freedom, Pennsylvania

## Fleetman's Library

(CONTINUED FROM PAGE 158)

SPRING SUSPENSION CATALOG, a new and revised edition of the "Streamliner" catalog, containing a listing of the complete line of spring suspension replacement parts, of the company—Moog Industries, Inc., St. Louis, Mo. May be obtained upon request to the manufacturer at 6650 Easton Ave., St. Louis 14.

POWER UNIT CATALOG, published by Hercules Motors Corp., Canton, Ohio. Presents to power users an up-to-date knowledge of the complete line of Hercules gasoline and diesel engines and power units now available in a wide range from 3 to 400 hp. Pertinent information is given to assist the power user in choosing the most suitable power for his particular application. Write the manufacturer at 201 11th St., S. E., Canton 2, Ohio.

TRUCK BODY CATALOG, a 12-page color catalog describting the new Fruehauf all-steel truck bodies and illustrating various door arrangements and other options which provides a choice of over 500 different body combinations. Write the company at 10940 Harper Ave., Detroit 32, Mich.

MEDIUM HEAVY DUTY HOISTS AND BODIES, a new folder describing the operation of St. Paul's Model 7 hoist and pointing out its construction features. The literature also shows steel dump bodies in various styles. Copies may be obtained by addressing St. Paul Hydraulic Hoist Division, Gar Wood Industries, Inc., 2207 University Ave., S. E., Minneapolis 14, Minn.

BUDA HEAVY DUTY DIESELS, a 16-page color catalog showing four new types of automotive heavy duty diesels, the 844, 844 Super, 1125 and 1125 Supercharged. Copies may be had by writing The Buda Co., Harvey, Ill.

BULLETIN NO. 220, an illustrated folder describing the 276 cu ft capacity, weather-tight welded steel shipping containers recently developed by Dravo Corp., Pittsburgh, Pa.

FRUEHAUF CATALOG, a new condensed-catalog folder in full color, containing illustrations of 18 Fruehauf models, including the new city delivery unit and open-top grain haul trailer. Address the company at 10940 Harper Ave., Detroit.

BUILDING MAINTENANCE PROBLEMS, a folder describting 15 urgent building maintenance problems, with remedial measures listed. Included in the guide are solutions to such problems as leaky roos, worn flashings and gutters, rough concrete, loose pointing, etc., Write Stonhard Co., 401 N. Broad St., Philadelphia 8, Pa.

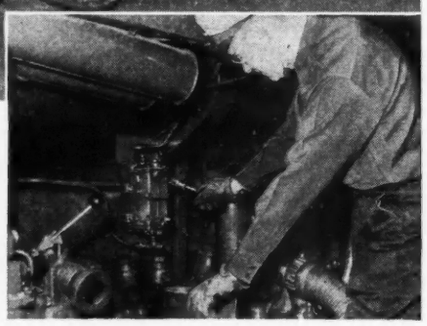
### FRENCH CHEMIST INVENTS NEW METHOD FOR GAS USE

A French chemist, M. Pathus-Labour, has made public a new device for the storage of gasoline that may completely change present-day methods of stocking and transporting this type of fuel, as well as of protecting it against fire. The new product is related to cellulose and can be wrapped around gasoline. It hardens in the form of a thin transparent film at the surrounding temperature and is almost completely non-inflammable. When wrapped in this envelope, gasoline can be handled like a solid object. If its use should become widespread, the types of drums, cans, trucks and boats now used to store this fuel would become unnecessary.

The use of the new product in internal combustion engines does not require any change in their construction, but merely the addition of a device for tearing the cellulose envelope. It will not leave any sediment in the gas tank or carburetor because it can pass directly from a solid into a gaseous state, without going through an intermediary liquid state. It costs only 150 francs per ton.

Inasmuch as the French Government does not wish to engage in expensive research at this time, the United States Government has agreed to carry on investigations concerning the possibilities of this product, in exchange for a non-exclusive permit for use by the U. S. Army.



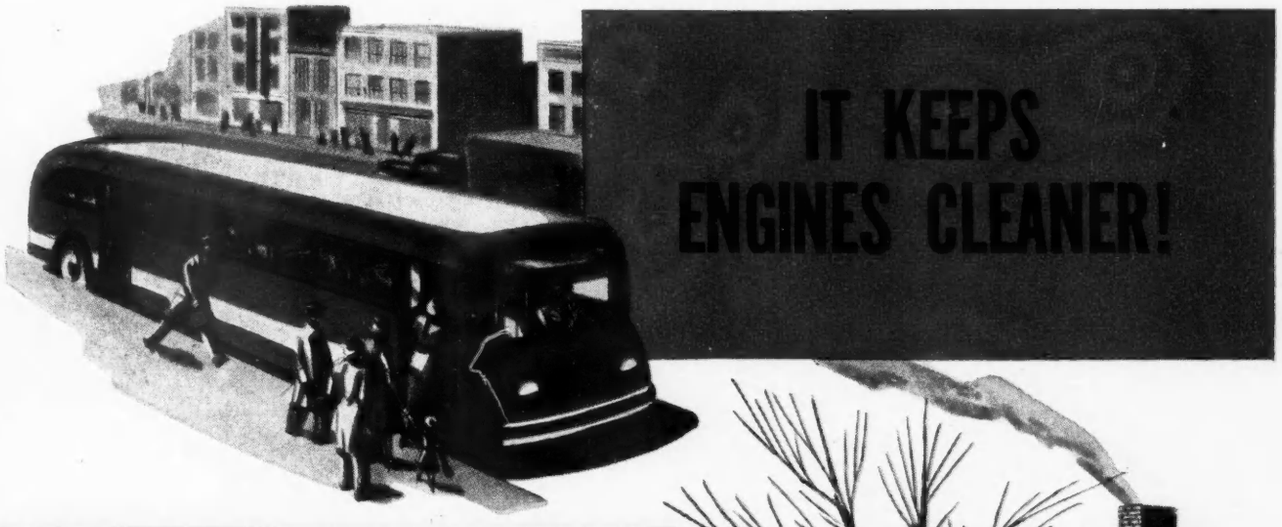


HANDLING GASOLINE *Safely!*

Nearly everyone understands the hazards involved when gasoline is improperly handled. With a clear understanding of the consequences, care in handling is the order of the day. Many of the major marketers of petroleum products equip their tank trucks with S.&J. Internal Hydraulic Safety Valves which immediately stop the flow of gasoline should a fire occur during unloading operations, or accompany a collision on the highway. Union Oil Company of California is one of the marketers of petroleum products who have equipped many of their tank trucks with S.&J. Internal Safety Valves.

**SHAND & JURS CO.**
BERKELEY, CALIFORNIA
NEW YORK CHICAGO HOUSTON LOS ANGELES SEATTLE

SHAND & JURS



**Maximum Profit** from truck and bus operation requires:

**a.** Efficient handling of all the business obtainable.

**b.** Doing it with the least amount of equipment.

This means you must do all you can to keep each unit of your equipment out of the shop and on the job. One big help is to always use an oil you can really rely on to do the best possible job of keeping your bus and truck engine working surfaces clean and well lubricated.

Many large fleet operators say Quaker State HD Oil is their choice for this double duty job.

Quaker State HD Oil *does* lubricate better, longer—*does* keep engine working surfaces clean and free from trouble-making sludge, gum and sticky "varnish."

It *does* help substantially to keep equipment in better shape with less servicing. Try Quaker State HD Oil in your equipment now and prove these statements.

**QUAKER STATE HD OIL AND SUPERFINE LUBRICANTS**

- *Use Quaker State HD Oil for trucks, buses, taxis, tractors.*
- *Use Quaker State Motor Oil for passenger cars.*

**QUAKER STATE OIL REFINING CORPORATION • OIL CITY, PENNSYLVANIA**

# Fuller Announces Two New Overdrive Auxiliary Transmissions

TWO new auxiliary transmissions of three-speed overdrive type have been announced by the Fuller Mfg. Co., Kalamazoo, Mich. The first of these is the Model 3T92 which is similar in basic design to the Fuller 3A92 auxiliary but features a novel full torque power take-off having forward and reverse rotation. This unit is intended for use in combination with heavy duty four- or five-speed primary transmissions.

The second unit is the Model 3B92, a companion model to the familiar 3A92 auxiliary. It has the conventional power take-off arrangement and provides the following gear ratios—0.836 to 1 overdrive, 1.00 to 1 direct, and 1.235 to 1 reduction.

The Model 3T92 offers the following ratios: 0.754 to 1 overdrive, 1.00 to 1 direct, and a reduction of 2.09 to 1. The power take-off has two ratios depending upon direction of rotation, the actual reduction with respect to engine speed being determined by the gear ratio of the primary transmissions. In the auxiliary the take-off has a ratio of 1.175 to 1 with same rotation as the input shaft, and 1,345 to 1 in reverse rotation.

The feature of the "full-torque" take-off on the 3T92 that distinguishes it from conventional take-offs such as are offered by Fuller on other models is that the drive is taken directly off the end of the input shaft. Consequently the drive is right from the main case and does not depend upon fastenings to hold the main box and take-off together. The new arrangement makes the drive an integral part of the transmission with the same rigidity and strength.

Gearing and shafts for the 3T92 auxiliary are the same as those in the 3A92. Both input and out-put shafts are 2¼ in. in diameter with a 10-spline end.

Either the No. 7520 or No. 7521 universal joint flanges will be furnished on the 3992. The output shaft is machined for flanges, sprockets, etc., furnished by the customer, bored to 1¾ in. ID and for use with a 3/16 x ⅜ in. straight key.

Both the front and rear end of the 3T92 are designed for cross-member supports. Shifting is handled by two shift bars, the Model AC control being designed to shift them. Power take-off is controlled by a single shift bar which can be operated by a single shift lever. Provision is made in the rear bearing cover for installation of speedometer gears. Oil capacity is 12 qt.



SAVE 3 WAYS by installing FULL Gasket Sets!

Cut out-of-service time . . . avoid the risk of oil, gas, water and compression leaks . . . save the expense of repeated trips to the repair shop by installing Fel-Pro FULL Gasket Sets the first time. The initial cost of FULL re-gasketing is low. The saving in time, trouble and money makes FULL re-gasketing a *wise investment*. You can always depend on Fel-Pro Gaskets to give complete, compression-tight, leak-proof service. That is why leading automotive manufacturers use Fel-Pro Gaskets as original equipment. Why not start this 3 *way savings* TODAY? See your Jobber about Fel-Pro FULL Gasket Sets NOW.

STOP every "DRIP" and keep him stopped use FEL-PRO!

Write for the New FEL-PRO Catalog!

*A new, informative catalog, containing complete listings of all gaskets needed for popular makes and models of cars and trucks, is yours for the asking. Write for your copy TODAY!*

W-2504-CC

FULL GASKET SETS, PACKINGS, GREASE RETAINERS

FELT PRODUCTS MFG. CO. 1539 CARROLL AVENUE • CHICAGO 7, ILLINOIS


## Adjustable Seat

**Autocar Company's new adjustable driver's seat designed to provide more comfort and driving ease. The seat cushion can be raised to three different positions at the front and three at the back. The matching back cushion, hinged at vertical center and rocking through an arc of 12 deg., can be set in any one of four positions. It can be moved fore and aft through nine different positions over a range of 5 in. The driver is also able to adjust the seat cushion, independently of the back, fore and aft, through three positions and a range of 2½ in. Installed in Autocar trucks, the new development is said to reduce considerably driver fatigue.**

# SHE HAS TO TAKE CHANCES...

## *You can play* SAFE !

There's one sure way to take the needless risk out of ring jobs: *install American Hammered Piston Rings in every unit of your fleet!*

And now that American Hammered Porous Chrome* rings are available for 131 different truck and bus engines, you can be sure of peak engine-efficiency for an amazing period. American Hammered Porous Chrome rings have set spectacular mileage records—delivered full efficiency during every record-breaking mile in millions of miles of the toughest kind of service. And they have reduced cylinder wear by half . . . increased piston ring life four—*even five* times. Ask your American Hammered jobber for Porous Chrome rings. Koppers Company, Inc., Piston Ring Division, Box 626, Baltimore 3, Maryland.

*VAN DER HORST PROCESS

## American Hammered Piston Rings


K
KOPPERS


There is no one accessory that more quickly pays its way, on an engine, truck, bus, car, or any motorized equipment, than a *good* oil filter.

For a filter that does the job it is designed to do can serve more than anything else to: (1) eliminate unnecessary wear and maintenance, (2) keep gum and sludge at a minimum, (3) assure more extra miles of lower cost operation.

The MICHIANA depth type Filter is this kind of accessory. It was perfected by MICHIANA engineers after extensive experience and practical field applications. As a result, operators of engine-powered equipment report that the principle and simplicity of MICHIANA Filters provide for the maximum in oil-cleaning effectiveness.

Consider the filters you use from an engineering standpoint and you will be convinced that MICHIANA Filters meet your most stringent requirements—with extra savings and economy.

**MICHIANA PRODUCTS CORPORATION**
**Michigan City, Indiana**

**MICHIANA OIL FILTERS**

*Request your copy of latest illustrated Bulletin 839 today.*



## Recording Thermometers

The Truck-Trailer Manufacturers Association has disclosed that considerable research has been devoted to automatic recording instruments for the perishable foods transportation branch of motor service, at least in connection with the heavier types of vehicles and the longer hauls.

Trailer operators, the association said, are well aware of the importance of maintaining the required temperature level when hauling perishable foods, especially frozen foods. Motor transporters have been equally aware of the desirability of having a visual and permanent record of the cargo temperatures during the haul—a proof of premium operation.

Fulfillment of the urgent need, the association continued, appears well within the realm of possibility. Described was progress made through cooperation of a well known instrument company, a prominent trailer manufacturer and a motor carrier. An initial automatic instrument was mounted on a refrigerated trailer in regular service of the motor carrier. A special vibration-free mounting was devised by the trailer manufacturer. Performance of this instrument still is being studied as to operational details, and if results prove out as have been indicated, it is expected that further installations will be made by the trailer manufacturer, according to the association.

For the purposes of compactness, and in order to assure ruggedness, a 10-in. diameter die-cast aluminum instrument case was utilized. This case is gasketed to render it dust-proof and moisture-proof. The recording chart itself is 8 inches in diameter with provision for a continuous seven-day record. The chart records temperatures from minus 40 degrees to plus 110 degrees Fahrenheit, and is rotated by a seven-day, hand-wound chart drive.


**"Are you sure we didn't take the wrong turn back there?"**

# You Save 4 Ways

1. Greater Payload Capacity
2. Lower Maintenance Cost
3. Reduced Fuel Consumption
4. Less Tire Wear

## WITH REPUBLIC High Strength Steels

**1. MORE PAYLOAD.** A minimum yield point of 50,000 pounds permits use of thinner and lighter sections to cut body deadweight. Every pound thus saved becomes a potential added pound of payload.

**2. FEWER REPAIRS.** Because these steels are 4 to 6 times more resistant to atmospheric corrosion than carbon steels, as well as high in strength, they make bodies more durable and long-lasting—keep them out of repair shops—save ever-climbing maintenance expense.

**3. LESS FUEL.** Lower body weight means a substantial saving in fuel when running light.

**4. LONGER TIRE LIFE.** Lighter weight when traveling empty also saves wear on tires.

To help designers and builders of truck and trailer equipment obtain greater benefits, Republic now offers three *different* high strength steels—Republic ALDECOR, Republic COR-TEN and Republic DOUBLE STRENGTH—in sheets, strip, plates and bars. For further information send for Booklet No. 445.

**REPUBLIC STEEL CORPORATION**
**GENERAL OFFICES • CLEVELAND 1, OHIO**
Export Department: Chrysler Bldg., New York 17, N. Y.

*Republic*
REPUBLIC STEEL
REG. U.S. PAT. OFF.
**HIGH STRENGTH STEELS**
**ALDECOR · COR-TEN · DOUBLE STRENGTH**

**Other Republic Products include Carbon, Alloy and Stainless Steels—Sheets—Plates—Pipe—Bars—Wire—Bolts, Nuts and Rivets**

## Compression Loss

(CONTINUED FROM PAGE 56)

is left on the cylinder walls, the ring will not be able to follow the surface. At high rates of speed they will bounce, striking the cylinder wall at some points, overheating and causing compression losses.

Surface hones are recommended to remove cylinder glaze, scuffed conditions, and wavy cylinder walls. These must be carefully used and under experienced hands, however, in order to be assured of a satisfactory surface. It must be remembered, too, that abrasives left in the engine from this operation, contribute to large extent to early piston ring failure and cylinder wear.

Failure to remove cylinder glaze is another reason for an unsatisfactory ring job and early cylinder wear. Manufacturers say that piston rings will scuff when the cylinder wall surface and the piston rings become too smooth. When the surfaces are too smooth, neither wear away, and when erosion stops, the heat of friction is increased rapidly to a point where one of the metals reaches melting point. This starts a scuffing action which wears in spots preventing rings from sealing combustion gasses.

### Valve Failures

IMPROPER valve seating, while important causes of compression losses, has been discussed before in a previous article. A review of causes of seating failures should suffice here.

Valve failures contributing to compression losses can be listed as imperfect surfaces, warped heads and stems, deposits destroying seating, weak springs and out-of-time conditions. Scored and burned heads and seats are caused by insufficient tappet clearance, deposits under head, weak valve springs, improper valve-to-guide clearance, improper engine cooling, incorrect valve seat width and related conditions which impair the heat dissipation from the valve assembly to the block.

Broken valves may be the result of weak valve springs, excessive spring pressure, excessive tappet clearance, high speeds and high temperature conditions. Broken springs result from high engine speeds, corrosion caused by improper crankcase ventilation, or overstressing.

(TURN TO PAGE 168, PLEASE)



WABER TUBES are the Nearest Trouble-Free Inner Tubes that Money can buy.

1. WABER TUBES are the Nearest 100% Pinch-Proof Nearest 100% Puncture-Proof
2. WABER TUBES are the Nearest 100% Protection against dangerous Blow-outs.
3. WABER TUBES are the only Premium Inner Tube with a complete line for Passenger cars and Trucks.
4. WABER TUBES will, in the long run, justify their use many times over.

Equip Your Trucks and Cars with Waber Tubes To-day!
Your Profit from longer tire wear and maintained schedules will begin to-morrow!

**GUARANTEE**

The new, improved patented WABER innertube is guaranteed not to go flat within two years from the date of purchase due to road accidents such as cuts, punctures, rim pinches or blowouts. Should any such road accident result in a flat tire, a new tube will be supplied by any dealer handling WABER tubes or by the WABER Company, pro-rating the replacement charge on a monthly basis for the service rendered.

• Specify WABER
• See Your Dealer
• Write Us Direct

THE WABER COMPANY
1824 W. 74th ST., CHICAGO 36, ILL.


"My wife doesn't trust me out alone."


# "Bon Jour, yourself," I growled!

IT MUST have been the sound of his footsteps that woke me from my snooze in a corner of the American Brakeblok plant.

Suddenly, there I was! Muzzle-to-face with a man wearing a beret.

"Bon Jour, mon Stopper," he said.

"Bon Jour, yourself," I growled, taking no chances on the way he'd pronounced my name.

Just then one of our big shots came rushing up. "Stopper, what's happened to your manners? This gentleman is from the American Brakeblok plant in Gif, France. He spoke to you in French."

I was in the dog house for sure. Of course, I knew American Brakeblok was *the best brake lining that could be made.* But, I'd never figured on men coming all the way from Europe to learn more about making it.

But this care in manufacturing here in America—or anywhere American Brakeblok Brake Lining is made—gives those smooth stops and the "soft" pedal that drivers want. So, when you install this superior lining, you've started your customers on the road to top brake performance.

For heavy duty work, American Brakeblok can take the toughest punishment and come up smiling. Just ask the fleet owners, drivers and maintenance men who've learned by experience.

Small wonder, people everywhere demand American Brakeblok Brake Lining. Delivery is fast these days on the *right* lining for all passenger cars, trucks and buses. Make it American Brakeblok for *your* next relining job.

Distribution through
39 strategically located NAPA Warehouses

NAPA Assurance of Quality

AMERICAN Brake Shoe COMPANY

AMERICAN BRAKEBLOK DIVISION
DETROIT 9, MICHIGAN

American Brakeblok
BRAKE LINING

## Compression Loss

(CONTINUED FROM PAGE 166)

Valve deposits may be caused by low temperature operation, high temperature operation, poor lubrication, inefficient carburetion, infrequent oil changes and conditions comparable to those outlined for sticking rings.

If the operator is experiencing compression losses attributable to defective valve seating, he can improve the conditions by observing the following points:

1. Keep loads and speeds to proper limits.
2. Use good grades of fuels and lubricants.
3. Require careful and timely engine overhauls.
4. Check valve clearance regularly.
5. Maintain efficient cooling systems.
6. Insist upon efficient carburetion.


ANYWAY YOU LOOK AT IT....

TRADE MARK YANKEE REG. U.S. PAT. OFF.

is Outstanding!

SAFETY

High fidelity vision that eliminates tricky illusions. No distortion. Easily adjusted to suit specific "seeing needs" of all drivers.

QUALITY

Over 32 years experience...since 1915. Technical research, up-to-the-minute production methods and painstaking attention to detail. Yankee Mirrors are the finest in the world.

ECONOMY

Built-in-durability, metal parts bonderized, "know-how" in processing mirrors — all add up to keep your replacement maintenance down!

NO. 245 TELESCOPIC ADJUSTABLE MIRROR WITH 5" HEAD

- Extends from 19¼" to 27¾".
- Universal Mounting.
- Adjustable to any position.
- Heavy Steel Tubing.

NO. 238 6" MIRROR HEAD

*Write for Catalog*

See Your Jobber

245H—REPLACEMENT MIRROR HEAD Made to fit the No. 245 Telescopic Adjustable Mirror.

CONVERSION KITS

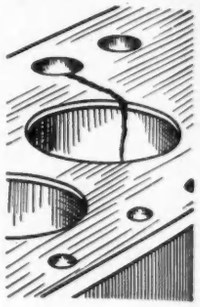
STOP AND TAIL LAMPS

DIRECTIONAL SIGNALS

YOU'RE SAFE WHEN YOU SEE WITH YANKEE

YANKEE METAL PRODUCTS CORP., NORWALK, CONN., U. S. A.


### Excessive Engine Wear



MUCH has already been said of premature wear in rings, cylinders and pistons, and much will be left unsaid concerning these conditions because of the wide scope of the subject. The causes of premature wear, however, might be divided into three categories for our purpose: those resulting from lubrication failures, those arising from improper overhaul and service, those arising from operating factors.

### Sticking Rings

Piston ring sticking, with resultant engine wear, is of two types, resulting from high temperature operation and that arising from low temperature conditions. Rings fouled through low temperature operation will eventually freeze and stick when exposed to high load or full throttle operations. Thickening of the oil, restriction of the rate of flow and the holding of solids in the grooves all contribute to eventual building up of deposits in the power section.

During cold engine operation the water vapor resulting as a by-product of combustion condenses on the cool cylinder walls and is scraped down into the crankcase, where it forms with other by-products of combustion, emulsifies and forms sludge. This accumulation bakes and hardens upon striking hot engine parts around pistons and in the oil ring slots. This condition is aided when bearings become worn so that a greater amount of oil is thrown into the power section. After the oil return slots become clogged, surplus oil is allowed to get into the combustion chamber, where decomposition soon results in added formations. The result is blow-by, excessive oil consumption, loss of power, freezing of the rings which soon damage the cylinder walls and pistons.

It is beyond the scope of this article to point out the causes of lubrication failures such as sludged engines, varnish formations, diluted oil and early oil breakdown due to acids. However, as every operator

(TURN TO PAGE 172, PLEASE)

# The only dependable, economical answer to top ring groove wear...

# SEALED POWER GI-60

MAKES OLD PISTONS NEW — KEEPS NEW PISTONS YOUNG

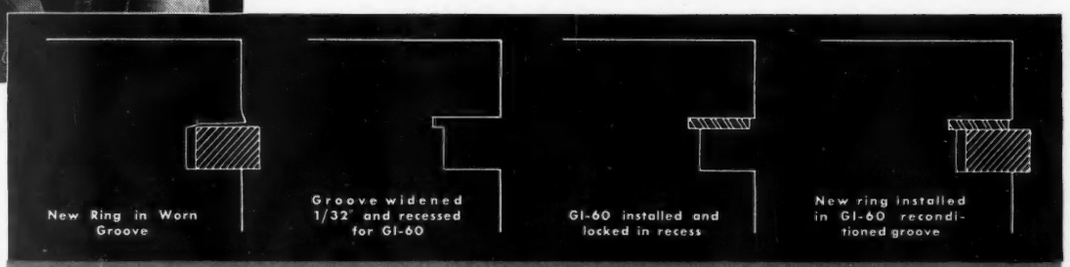


ALL good mechanics know that worn top ring grooves will put two strikes on the best piston rings ever made. A new ring installed in a worn top groove permits gases to blow by, causing short ring life, cylinder wear, and excessive gas waste. If you widen the groove and put in a wider ring, you are changing the original specifications of the engine manufacturer and inviting trouble. If you put in an ordinary spacer, you have merely put in a wider ring in two sections.

The new Sealed Power GI-60 Contracting Groove Insert is not a "spacer." It does not float, but is anchored securely at the top of the ring groove. Before the GI-60 is installed, the top groove is re-grooved to an absolutely true surface 1/32" wider than the original groove, with a 1/32" recess at the top. Into this recess the GI-60 Groove Insert is fitted, locking itself permanently in place, forming a heat-treated spring-steel shield that resists wear and pounding of the top land better than either aluminum or cast iron can resist it.

Your Sealed Power jobber is now equipped to furnish this service for you. It is the only dependable, economical answer to top ring groove wear. It is equally effective in worn or new replacement pistons. The cost is low and the benefits are great. Thorough field tests by commercial fleets have proved the efficiency and value of GI-60 beyond any doubt. Ask your jobber now for this new Sealed Power service.

***And when you need new pistons it will pay you to specify Sealed Power Heavy Duty Pistons***




SEALED POWER PISTON RINGS

## SEALED POWER CORPORATION

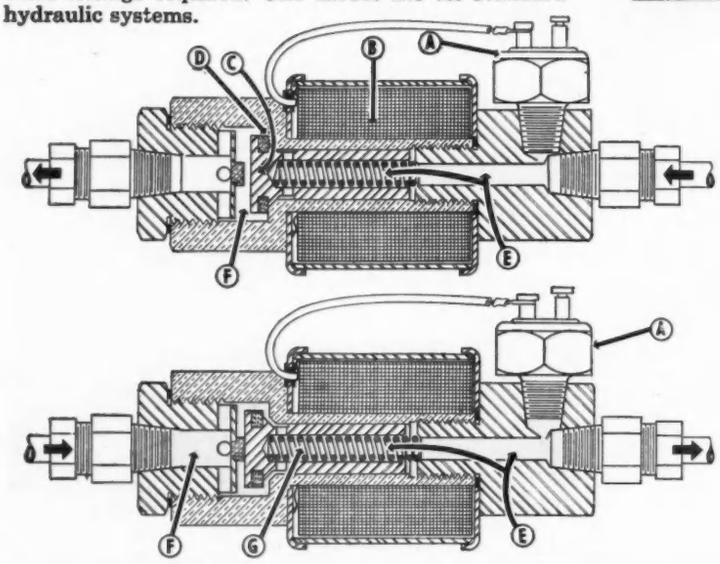
MUSKEGON, MICHIGAN • STRATFORD, ONTARIO

# SNAP-STEP-LOCK THOSE BRAKES

## A REVELATION IN EMERGENCY BRAKES

The *Mico* **BRAKE LOCK** is a remarkable new development in the hydraulic brake field. It furnishes dependable, powerful four-wheel or rear-wheel holding power never before attained with any emergency brake or lock. The electrically controlled snap-on switch insures fast, easy on-and-off application.

Inexpensive and simple to install and operate. No extra fittings required. One model fits all standard hydraulic systems.




**MICO BRAKE LOCK**

**"BRAKE-LOCK" in "ON" Position**

1. Pressure applied on switch A by fluid in area E has activated solenoid B which draws valve C against seat D by electro-magnetic attraction. Application of the brakes has created high pressure in area F, but release of the pedal has released pressure in area E, shutting off switch A and eliminating all current draw. Fluid pressure in chamber F seals valve C against seat D thereby positively maintaining all line pressure between valve C and the wheel cylinders.

**"BRAKE-LOCK" in "OFF" Position**

2. Pressure switch A and solenoid B are inactive because dash control switch is in "off" position. Brake pedal application has equalized pressure in area E and area F. When pressures in areas E and F are equal, spring G returns valve C to open position, allowing free flow of fluid in either direction. No electrical current is consumed during "Brake Lock" release.

*"Where braking power counts...count on* **MICO***"*

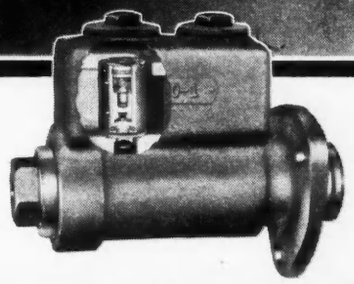
# MICO BRAKE LOCK

## New!


**ELECTRIC CONTROL**

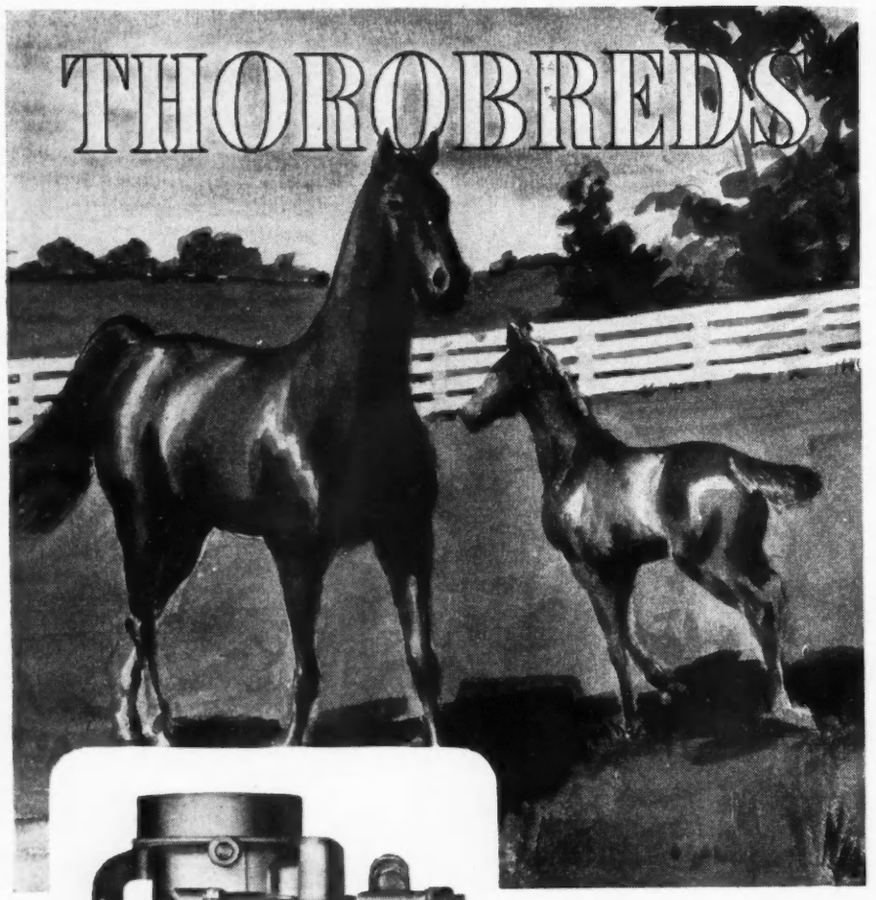
**Ask your MICO dealer or write**

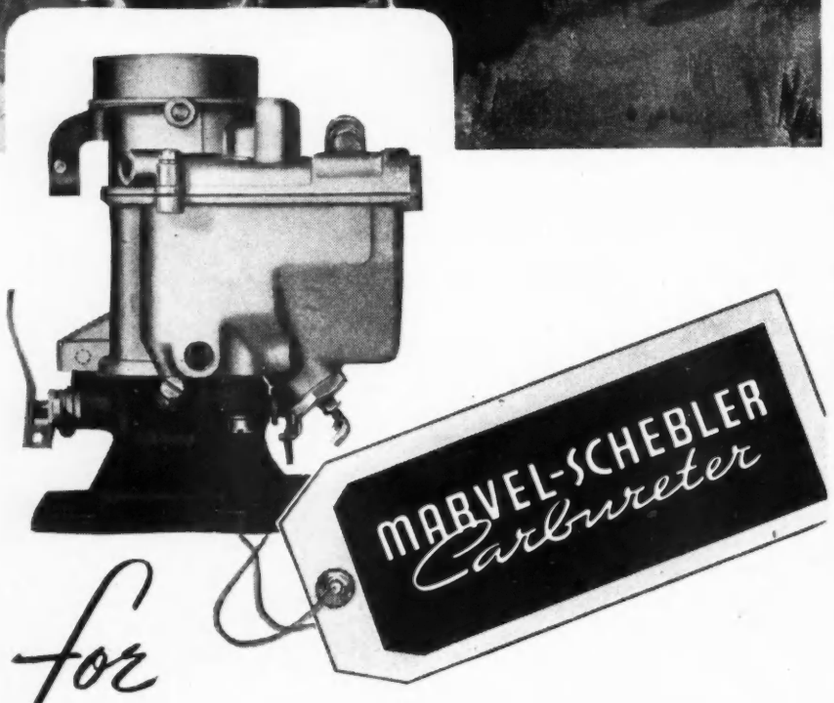
## MICO POWER BRAKE CYLINDER



Replaces the master cylinder on trucks with hydraulic braking power. Its power progresses while in mid-action from that of a conventional low pressure cylinder to that of a high pressure cylinder, more than doubling the normal braking power of the truck. MICO is the brake cylinder with the built-in relief valve which allows excess fluid to flow freely into reservoir at any desired pressure point.

**MINNESOTA AUTOMOTIVE, INC.** Minneapolis 3 Minnesota




for

CAR AND TRUCK REPLACEMENT

*for Light Aircraft*

*for Agricultural Power Plants*

A PRODUCT OF B-W BORG-WARNER

MARVEL-SCHEBLER CARBURETER DIV.
BORG-WARNER • • FLINT 2 MICHIGAN

## Compression Loss

(CONTINUED FROM PAGE 168)

knows, the following points will do much to eliminate such conditions along with sticking rings and valves, the causes of compression failures.

1. Use fuels which will give the most efficient combustion.
2. Use the best grade and proper types and viscosity of oil.
3. Keep carburetion at high frequency.
4. Keep pistons, rings, cylinder walls to close tolerance.
5. Keep crankcase ventilation to new vehicle standards.
6. Keep operating temperatures to manufacturers' specifications.
7. Change oil and oil filters frequently.
8. Avoid overspeeding, excessive engine idling and lugging on hills.
9. Keep loads to proper limits.

Much of the criticism concerning premature wear can be leveled directly at the mechanic. Dirty assembly methods give room to contaminated lubrication, while abrasives left in the engine after honing or boring quickly find their way into the power section and bearings to reduce life. Use of wrong size and wrong type parts is a frequent cause for early compression failures, as many times bores are not checked carefully, rings are not fitted accurately or oversize assemblies are replaced with standard sized. Failure of the mechanics to check alignment of rods, pistons, piston pins, cylinders and crankshaft will give rise to the possibility of early compression failure.

Inaccurate reading of instruments or use of instruments improperly calibrated come in for their share of responsibility in improper fittings. It is imperative that reliable instruments be used and that they be used properly in determining wear in old parts and fitting of new parts.

However, the driver and fleetman himself can be blamed in some types of compression failures. Improper engine break-in is probably one of the greatest factors responsible for an unsatisfactory ring job. Many failures are a result of starting an engine and letting it idle slowly during the first warm-up period. An idle speed there

(TURN TO PAGE 174, PLEASE)

# FRAM SAVES YOU
## REPAIRS, TROUBLE, MONEY

*. . . because*

**FRAM**

**Cleans the Oil that Cleans the Motor**


We don't "claim" it—we unconditionally GUARANTEE Fram oil filters! Install Fram filters on your fleet. If you feel, within 90 days, that you can afford to operate without them, your purchase price will be cheerfully refunded. If your fleet already has filters, install genuine Fram replacement cartridges to remove dirt, dust, grit, sludge and abrasives that grind away or gum up vital engine parts. Call your Fram distributor today! Fram Corporation, Providence 16, R. I. *In Canada:* J. C. Adams Co., Ltd., Toronto, Ontario.

# FRAM OIL & MOTOR CLEANER

*Cleans the Oil that Cleans the Motor*

## Compression Loss

(CONTINUED FROM PAGE 172)

is insufficient oil thrown on the rings, pistons and cylinders to lubricate them properly.

Full throttle operation at low speeds as well as high speed operation during the first 200 miles will do much to ruin rings for the same reason.

Many overheating conditions arising from a newly overhauled engine are a result of a clogged system, caused by accumulations which have dried out in the cooling system during the lay up. When the engine is returned to service, these flakes and sediment accumulations break away and re-circulate until they become lodged in the block and radiator. For this reason it is imperative that the cooling system be cleaned after a re-ring or an overhaul job.

Lugging on hills (failure to shift down to the proper gear), overloading and overspeeding can be blamed for much of the premature compression failures, while use of improper viscosity oil is another prominent factor in early wear. Many times the driver fails to warm up the engine properly before starting the load. Much of the wear takes place during the first operation of the engine, especially if the oil is cold.

It is obvious to the reader that this article has merely scratched the surface with regard to causes and cures of compression losses. No attempt has been made to treat the subject exhaustively, but it is felt that the outline will serve to provide the reader with a practical guide to trouble shooting common causes and effects of such failures. If these suggestions are followed religiously, satisfactory service from overhauls and re-ring jobs will be assured, with increased engine efficiency and lower operating costs the reward.

*END*

***(Please resume your reading on P. 57)***


WESCO

There is extra service engineered into WESCO TIRE CHAINS with balanced degrees of hardness, toughness and tensile strength—the hardness to resist wear, the toughness to withstand shock and extra strength that assures full chain life.

That is why experienced fleet operators prefer WESCO TIRE CHAINS—fabricated from chain made for tire chains by the tire chain specialists.

Check with your local WESCO Distributor.

WESTERN CHAIN COMPANY
1801 W. BELMONT AVE. CHICAGO 13, ILLINOIS

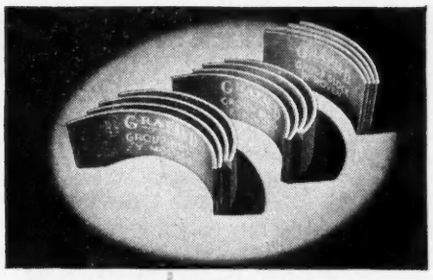

### RADIO SPOTLIGHT

On Sunday, Oct. 26, International Harvester's nation-wide "Harvest of Stars" program will be broadcast from the Biltmore Hotel, Los Angeles where it will become a part of the opening day festivities of the annual convention of the American Trucking Association's, Inc. Ted V. Rodgers, ATA's retiring president, will be presented with a citation in honor of his long service to the industry.

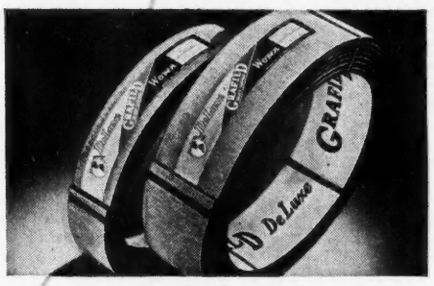
On the following day, Monday, Oct. 27, the "Voice of Firestone" program will pay tribute to the trucking industry, also in connection with the ATA convention.


**A salesman selling Commercial Car Journal? Well don't just stand there, Joe—throw him in!**

# YOU GET A World of Value WHEN YOU USE WORLDBESTOS BRAKE LINING



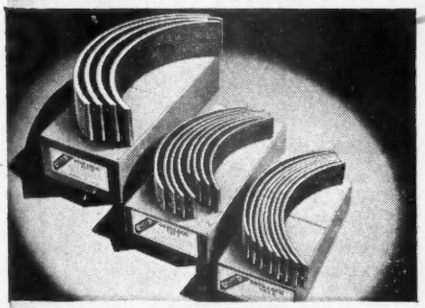
**TRUCK GROUP BLOCKS** — These master segments are engineered for thousands of models of trucks dating from 1933.



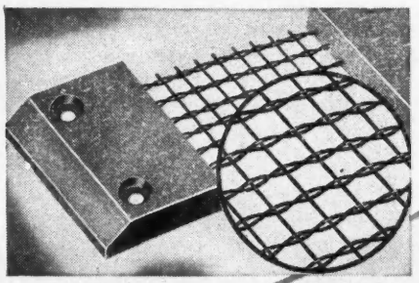

**DELUXE WOVEN** — A super-quality, dense, high friction lining for passenger cars, trucks and industrial applications.


**PRESCRIBED FRICTION SETS** — "Prescribed" or "Engineered for each type brake" to give correct braking, longer life.

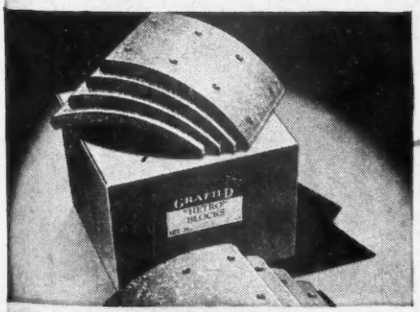

**ROYAL GRID MOLDED (ROLLS)** — A top quality molded lining designed especially for internal brakes. Quiet and long-lived.



**GRID LOCK SETS** — Wire back sets for Ford, Chevrolet, Plymouth and the popular GM and Chrysler cars.



**MESHLOCK WIRE BACK REINFORCEMENT** prevents "spot bulge" when riveting lining to brake shoes — no more daylight between lining and shoe, spongy pedal action or tough adjustments.




**HETRO BLOCKS** — Truck and bus blocks engineered in several formulas. Provide lowest cost per mile; highest safety factor.

## WORLD BESTOS CORP.

**NEW CASTLE, INDIANA**

6002

## CCJ Newscast

(CONTINUED FROM PAGE 102)

### CHEVROLET CAMPAIGN

Spark plugged by the slogan "Bring It Back to Chevrolet—Parts-Service-Accessories" Chevrolet has opened a nation-wide campaign among dealers and their employees for an aggressive move to get car and truck owners and wholesale parts buyers to deal exclusively with Chevrolet dealers. On the average, Chevrolet reports that 32 owners out of a hundred deal with Chevrolet establishments while the other 68 take their business to independents. What they want is to get some of the 68 to return to the fold.

Since Chevrolet has about 1,500,000 unfilled orders for parts on the books and adds to this backlog at the rate of some 30,000 orders per day, this campaign is designed more to boost the morale and customer relations of the nation-wide organization and prepare for stiffer competition than it is to increase the dollar volume of business. According to figures releas·d by the central office, there are about 6000 Chevrolet dealers, about 87,000 employees including dealers and mechanics, and a grand total of 344,000 wholesale parts customers.

At the present time sale of Chevrolet parts is running around $400 million while accessories touch $125 million yearly. This represents over half billion dollars of service business. The labor bill alone is estimated at about $185 million as compared with $71 million before the war.

### HOME TOWN NOTES

Fleetmen operating in or near the following cities will find these items of note:

Chicago—A new $150,000 terminal for the Geo. F. Alger Co. is being constructed at 2510 West 26th St. It will provide a dock space of 160 x 40 ft with 32 truck doors, and is expected to be completed on Nov. 1.

Columbus, Ohio—The Fruehauf Trailer Co. branch at 320 Fletcher St., partially destroyed by fire a few months ago, has been completely rebuilt and modernized.

Missoula, Mont.—A new $75,000 freight terminal for Consolidated Freightways is being built at the corner of Burns & Turner Streets.

Pittsburgh—Electric Products, Inc., 5929 Baum Boulevard, has been named exclusive distributor for Motorola products.

Stockton, Cal.—A new Autocar sales and service branch at 907 Wilson Way (Route 99). J. H. Phillips is in charge.

### VIRGINIA WARNS ON OVERLOAD

A sharp warning against overloading was issued last month by Virginia's state traffic and planning engineer, Burton Marye, Jr. Henceforth trucks traversing Virginia highways that are found to be considerably overloaded will be required to either unload or transfer the amount of overload.

"The efforts of the highway department and the state police to enforce Virginia's statutory weight limits have not been a complete success," Marye said. "Ninety per cent of the violations are by out-of-state trucks. This is not meant as an indictment of all out-of-state truck lines because many of them keep well within our limits. Others do not, however, and there is little if any evidence that they intend to do so.

"Fines, apparently, are not, in many cases, a sufficient deterrent against repeated overloading. The Department, theref re, has ordered additional platform scales for installation on its important highways. When these scales are installed, loading platforms will be constructed.

"Vehicles overloaded to a considerable

(TURN TO PAGE 180, PLEASE)

### Rolling Billboard


**Ripon Foods, Inc., of Ripon, Wisc. has found this 32-ft Trailmobile a very effective medium for portraying storybook characters and "Kiddie Cookies"**


# STREAMLINED SERVICE

WITH JOYCE SHOPMASTER 2-POST LIFTS

Are you keeping up with the amazing developments in streamlined service operations?

Multiple Lift installations are proving their tremendous pulling power everywhere . . . a Lift for every mechanic and for every service are reaping huge profits in attracting trade and cutting service time.

The completeness of the Joyce line of ultra-modern hydraulic Lifts meets every demand. You can get Joyce Drive-On and Free Wheel single-post Lifts for lubrication and tire service; Shopmaster 2-Post Lifts for greatest efficiency on repair and maintenance jobs. For any size station you can get exactly what you need . . . AND YOU CAN GET THEM RIGHT NOW!

It is better to invest now in adequate modern lifting equipment than risk the loss that dogs the poorly equipped station.

Consult us about the new Joyce developments. Send for Catalogs 192-L and 303-L.

*IN CANADA: Midland Foundry & Machine Co., Ltd., Midland, Ont.*

- SINGLE-POST AUTO LIFTS
- SHOPMASTER 2-POST LIFT
- BUS & TRUCK 2-POST LIFTS
- LIFTMASTER HYDRAULIC JACKS
- "FREE WHEELER" LUBE JACKS
- HOLD-A-CAR CHASSIS STANDS

THE JOYCE-CRIDLAND CO. • DAYTON 3, OHIO

# additional building will mean fast deliveries on all gasket and oil seal orders

NO MORE delays . . . no job tie-ups . . . no snarled schedules because of slow gasket deliveries! For Victor will fill all orders with a speed that will enable you to keep your work rolling—right on time!

How can we do it? Look at that building we recently acquired. Five stories. 200,000 square feet, railroad tracks on two sides, six truck platforms. And all of it will be devoted to storing, assembling, packing, and shipping.

That means that every one of our 90,000 items will be handled swiftly and accurately to fill your needs.

We're proud of our position as the country's largest producer of gaskets, oil seals, and packings. And every member of our organization is pledged to uphold this position—to offer you a better product, and *get it to you faster!*

To this end, in our newly added building we will strive to fill as many orders as possible on the same day they are received . . . for your convenience.

***Our original plant,** containing nearly eleven acres of floor space, at 5750 W. Roosevelt Road, Chicago, will now be used exclusively for manufacturing. Thus, the facilities which made Victor the country's largest producer of gaskets will now be even greater to meet your increasing demands.*

**VICTOR**

**GASKETS • • OIL SEALS**

## CCJ Newscast

(CONTINUED FROM PAGE 176)

degree will be required to either unload or transfer the amount of overload before being allowed to proceed. The Department dislikes having to resort to this measure and feels it would not be necessary if it were not for out-of-State violators."

### STRUBLE TO HIGHWAY

E. A. Menhall, president of Highway Trailer Company, has announced the appointment of A. L. Struble as a member of the company's executive group and as director of the trailer merchandising division. For the last five years Mr. Struble has been vice president in charge of sales for Trailmobile.

Mr. Struble entered the truck-trailer field in 1937 as sales manager of the Fruehauf Trailer Company of Detroit and later served as that company's vice president in charge of sales. Prior to that he had been associated for ten years with the Reo Motor Car Company, first as merchandising manager and later as manager of the truck division.

Mr. Struble has organized several nationwide selling organizations and is credited with many technical developments in mass selling and sales promotion.



There is no substitute for genuine Bendix Drive Parts

You wouldn't waste any "corn squeezins" using it for antifreeze. But there is another type of shortsightedness that can have serious consequence—the use of other than genuine parts for repairs.

Your customers count on *you* for reliable service and repairs. *You* can count on Genuine Bendix* Drive Parts to give the same complete and unfailing customer satisfaction as the original Bendix Drive.

For Bendix Drives have a nation-wide reputation and are performance proven over the years by more than sixty-five million installations.

*Don't take a chance on losing valuable service business just to save a few pennies—be sure to specify Genuine Bendix Drive Parts the next time you order from your distributor.*

*REG. U. S. PAT. OFF.


"Look for the blue and white box"

Bendix Drive

ECLIPSE MACHINE DIVISION of Bendix AVIATION CORPORATION

ELMIRA • NEW YORK


### TRANSPORTATION COURSES AT AMERICAN UNIVERSITY

Comprehensive courses on highway transportation will be offered at the American University, Washington, D. C., from Oct. 28 through Nov. 25.

The program includes a general section consisting of courses covering overall highway and motor transportation problems with emphasis on safety, in addition to a coordinating course on basic problems in transportation. There will be a special section on freight transportation.

At a series of evening events the students will hear addresses by Arthur C. Butler, director, National Highway Users Conference; Major General Philip B. Fleming, Administrator, Federal Works Agency; Pyke Johnson, president, Automotive Safety Foundation; A. W. Koehler, manager, National Association of Motor Bus Operators, and Ted V. Rodgers, president, American Trucking Association.

Students may apply for admission by submitting information about their educational background or their practical experience. No specific previous education is required, and there is no age limit.

Registration will be accepted for the entire course or for the general section and one of the special sections. The tuition will be $125 or $100, respectively, and veterans may participate under the provisions of Public Law 346.

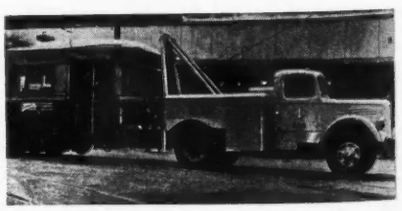
Applications for admission and requests for information should be addressed to Dr. L. M. Homberger, American University, School of Social Sciences and Public Affairs, 1901 F Street, Northwest, Washington 6, D. C. Final registration day will be October 23, 1947.

### TRAILERSHIPS: N. Y. TO ALBANY

Two surplus LST's (Landing Ship, Tanks), their bows converted with two permanent ramps, are ready to ply the New York-Albany run carrying loaded trailers. The fee is $1.25 per linear foot and capacity is fifty 30-ft trailers. Trailership, Inc., executives have figured time, fuel, insurance and maintenance costs, claim they can save a trucker $600 per year per trailer. An interesting bonus lies in the fact that the sky's the limit on loads—a factor which may add appreciable savings with proper dock side maneuvering.

(TURN TO PAGE 248, PLEASE)

### Trolley Service



**Owned by Indianapolis Railways, this specially-equipped Mack wrecker furnishes enough power to raise and move a 35,000-lb trolley. The winch and specially-designed winch boom have a capacity of 25,000 lb and a mobile telephone unit keeps it in constant touch with the control office**

# Gulf Research brings you an improved detergent-type oil for heavy-duty service

# THE NEW GULFLUBE H.D.!

## Combines a tough lubricating film

This film provides better lubrication for your engines—cuts maintenance costs—helps improve performance.

## With full detergency

**In automotive Diesel engines:** Gulflube H.D.'s full detergency means you avoid high temperature sludge, piston varnish, lacquer, and stuck rings. You get cleaner engines, with a minimum of fuel soot deposits.

**In gasoline engines** (in extra heavy-duty service): This full detergency means you avoid deposits and ring sticking due to oil oxidation—and other harmful deposits not caused by oxidation of heavy ends of unburned fuel which may pass the rings and contaminate the lubricating oil in the crankcase.

## Holds idling pressures

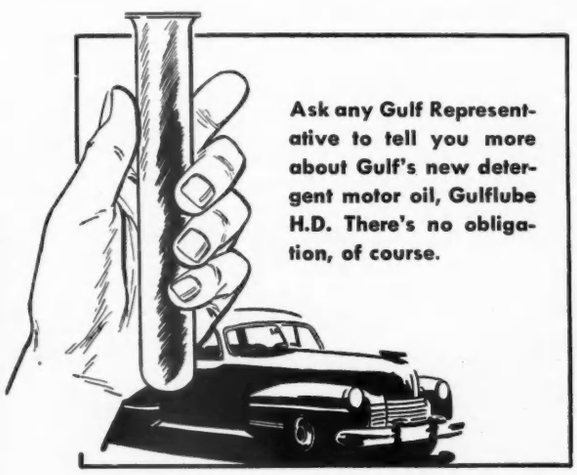
High Viscosity Index of Gulflube H.D. insures high pressure gauge readings when your motor is idling.

## Cuts down drag

You get a minimum of drag and frictional resistance when starting in cold weather.

## Cuts oil consumption

Your rings stay clean with Gulflube H.D.; and that means you don't lose oil by pumping. Gulflube H.D. will not foam, nor corrode alloy bearings.



**Ask any Gulf Representative to tell you more about Gulf's new detergent motor oil, Gulflube H.D. There's no obligation, of course.**

GULF

***Switch to***

# GULFLUBE H.D.

***Gulf's New Detergent Motor Oil for Diesel Engines and Gasoline Engines in Extra Heavy-Duty Service.***

## CCJ Newscast

(CONTINUED FROM PAGE 176)

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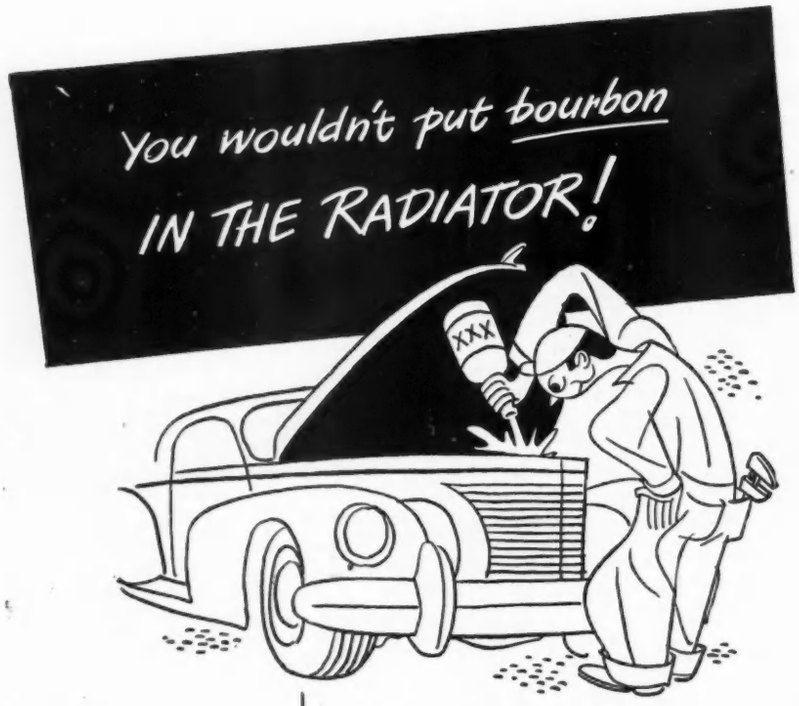


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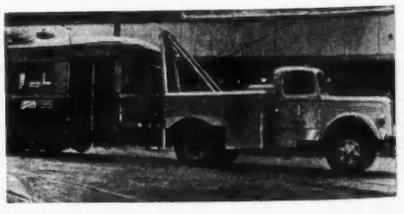

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## Combines a tough lubricating film

This film provides better lubrication for your engines—cuts maintenance costs—helps improve performance.

## With full detergency

**In automotive Diesel engines:** Gulflube H.D.'s full detergency means you avoid high temperature sludge, piston varnish, lacquer, and stuck rings. You get cleaner engines, with a minimum of fuel soot deposits.

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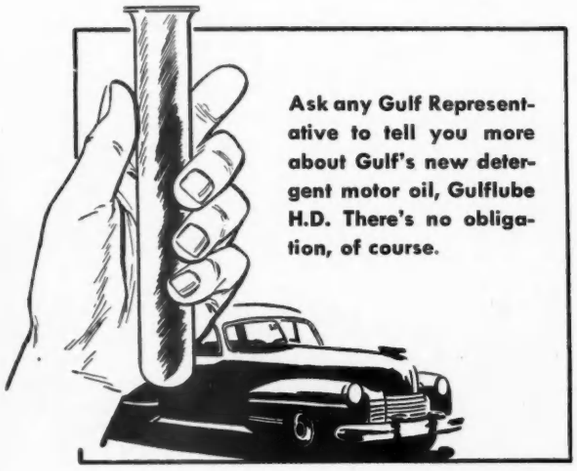

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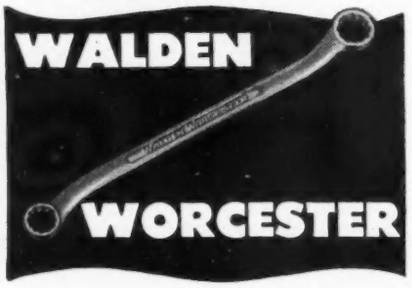
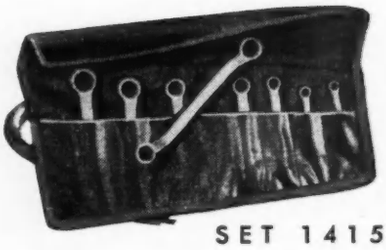



## BOXTITE WRENCHES

- **METAL** — New "Power-Packed" Alloy
- **FIT** — Precision Broached Opening
- **WEIGHT** — Lighter but Stronger
- **USE** — Longer — Greater Leverage
- **FINISH** — Satin Chrome, Rust Resisting
- **HEADS** — Wide-Arm Offset Design



SET 1415

**Your favorite set of Box-Tite wrenches with the precision broached 12 point openings, 3/8" to 1". Try these new drop-forged, extra tough wrenches with the Power-Packed alloy heat treated and hardened. Write for additional information.**

WALDEN WRENCHES WORCESTER

**STEVENS-WALDEN, INC.**

**Worcester • Massachusetts**

*Over Forty Years of Master Toolmaking*


## Reader Digest

(CONTINUED FROM PAGE 33)

### Compression Losses

by M. K. SIMKINS, Technical Editor, Commercial Car Journal

HIGH compression losses go hand in hand with excessive operating costs, says the author of this article, and proceeds to discuss premature wear, breakage, carbon deposits, inaccurate overhaul methods and improper operating factors as common causes of inefficient engine performance. He shows how to diagnose compression failures from engine performance, engine sounds, with a vacuum gage and with a compressioin gage.

After the trouble is diagnosed, it is imperative that the mechanic know the cause of the trouble in order to prevent recurrence. The author proceeds to discuss piston ring sticking, breakage, improper fitting, cylinder wear and warpage, valve failures and operating temperatures, showing how these conditions cut performance, as well as how to cure the troubles.

He blames mechanics, drivers and even operators for many complaints of premature compression loss through early ring and cylinder wear, and points out many factors in overhaul, operation and driving which will prolong the life of the engine and enable the fleetman to attain improved engine performance with better operating economy. See page 53.

*END*

*(Please resume your reading on P. 34)*

### 29 Years—No Accidents

**Following the recent pre-Rodeo parade in Detroit, Driver Mike Hertel is congratulated by President L. J. Haley, both of Detroit Terminal Cartage Co. Wm. E. Colwill looks on. Hertel has driven 29 years without an accident. In the parade he piloted the 1910 Federal shown alongside a modern truck of the same make**


**HEIN-WERNER HYDRAULIC JACKS**

Made in models of 1½, 3, 5, 8, 12, 20, 30, 50 and 100 tons capacity as well as service jacks for shop use and Bumper-Lifts for passenger cars. See your H-W jobber for details.

HEIN-WERNER CORPORATION
WAUKESHA, WISCONSIN


## WGB CLAROFICATION Is Economy

WGB ClarOfiers and Cartridges cost less because they do more and do it longer. The ClarOfier is practically indestructible and every atom of the Cartridge is essential to filtration — and the Cartridge can be changed without tools.

There is a reason why such companies as Autocar and Mack Truck are using — and have used — ClarOfiers as standard equipment for years; the reason is the economy operators find with ClarOfier equipment.

*This new 2-color book explains the construction, operation, and economies of clarofying oil for gas and Diesel engines. Write for a free copy.*

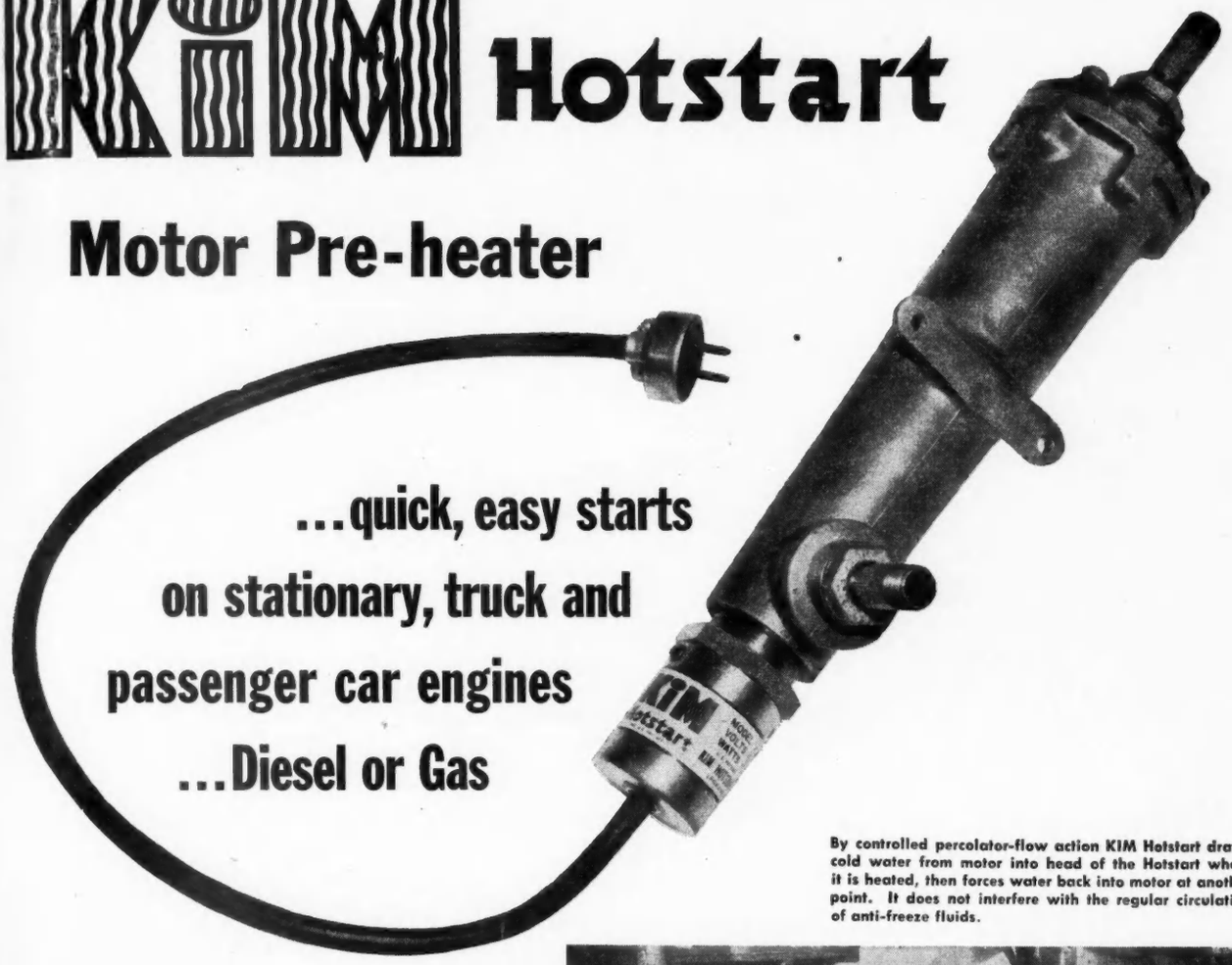

**WGB**

**OIL CLARIFIER, INC.**

**KINGSTON, N. Y.**

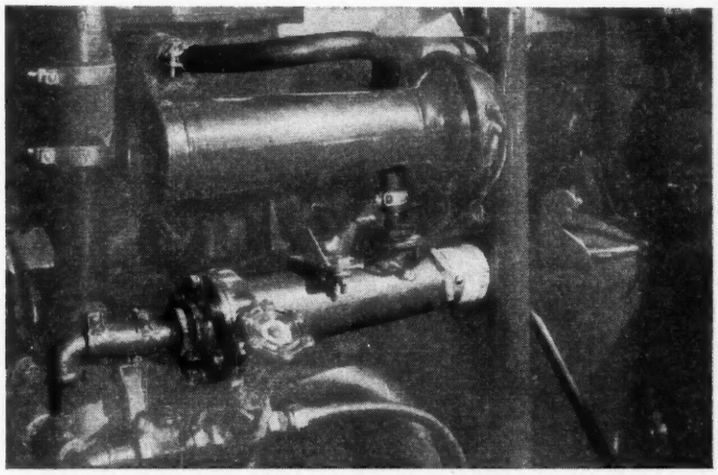
# KIM Hotstart

## Motor Pre-heater




**...quick, easy starts on stationary, truck and passenger car engines ...Diesel or Gas**

By controlled percolator-flow action KIM Hotstart draws cold water from motor into head of the Hotstart where it is heated, then forces water back into motor at another point. It does not interfere with the regular circulation of anti-freeze fluids.



**WHAT IT IS...** The KIM Hotstart is an electrically operated pre-heater for warming motors while they are idle. It is designed for use on either stationary or mobile engines of all sizes — diesel or gas.

**WHAT IT DOES...** The use of a KIM Hotstart reduces motor wear and depreciation. Starting is quick, easy — regardless of severe weather. Battery life is lengthened. Cost of terminal heating can be cut substantially. Motors need not be kept idling in layovers. Operation schedules lose less time.

**WHO CAN USE IT...** The KIM Hotstart is used wherever there are engines and electrical outlets for a hookup. Fleet operators — bus systems — fire departments — contractors — tractor and crane operators — farmers — passenger car owners; all these and others can use it profitably.

**WRITE FOR LITERATURE...** Use the coupon for illustrated folder and name of your nearest KIM Hotstart dealer.

## KIM Hotstart Mfg. Co.

**West 917 Broadway • Spokane 11, Washington**

KIM Hotstart Mfg. Co.
West 917 Broadway, Spokane 11, Wn.

Please send literature, prices and name of local dealer.

Name _____

Company _____

_____
Street City Zone State



*Use postage-paid card inserted on page 61 for free information on advertised products*

## CCJ Newscast

(CONTINUED FROM PAGE 180)

### 46 HIGHWAY DIVISIONS EXCEED $94,000,000

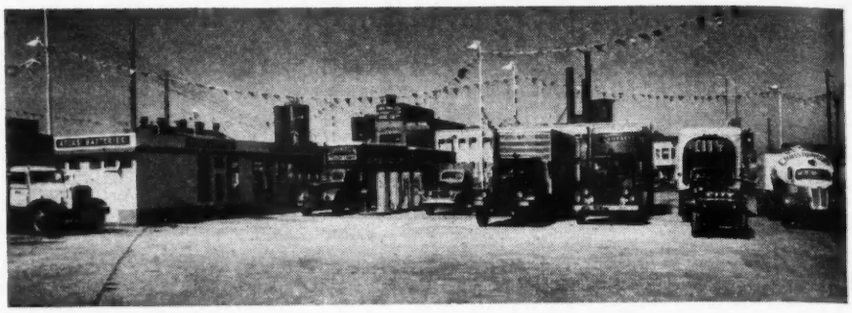
State highway user imposts diverted in 1946 to non-highway purposes were $94,579,000 according to recently released Public Roads Administration figures. Actually, non-highway use of highway user revenues was $36,399,000 greater because PRA offset that sum against appropriations for highways from State General Funds.

Proceeds of the 1946 highway user tax dollar were spent 56 cents for construction, maintenance and administration of state highways; 11 cents for state highway police, safety and service of state highway bonds; 27 cents for local roads and streets; and 6 cents for non-highway purposes.

Leading the list of diverters was Rhode Island which diverted 47.68 per cent of net funds distributed. Other states diverting over 15 per cent were Florida, 36 per cent; Louisiana, 25 per cent; Texas, 21 per cent; Georgia and Nebraska, 17 per cent; Tennessee, 16 per cent. Largest in dollar amount of diversion was Texas with $19,442,000 which was followed closely by Florida with $17,998,000.

The 1946 diversions reported by PRA represent a continued downward trend in the use of highway user taxes for non-highway purposes. However, since 1924 diversions aggregate the tremendous sum of $2,416,136,000.

### Downtown Truck Service



**Described as San Francisco's only downtown truck service station, Claude Stoffer's new Chevron unit offers many unusual facilities and 24-hour service**

### U. S. STUDIES PRE-COOLING

Improved methods of refrigerating fruits and vegetables from field to consumer will be sought in a project set up last month by the U. S. Department of Agriculture under the Research and Marketing Act of 1946.

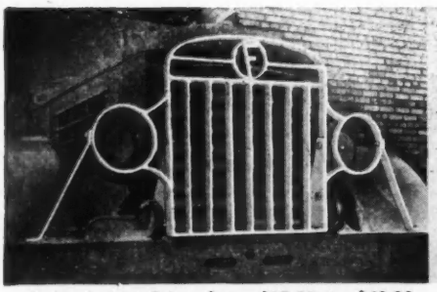
One phase of the study will deal with pre-cooling produce which is to be shipped in fresh form before it is shipped to determine possible benefits and to demonstrate how pre-cooling can be done advantageously. Another important phase will be to determine the advantages of prompt and continuous cooling of produce from the time it is harvested until canned or frozen.

### NEW GULF VICE-PRESIDENTS

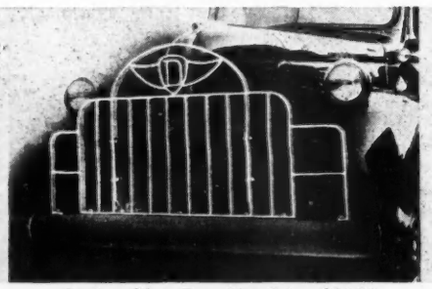
At a meeting of the Board of Directors of the Gulf Oil Corp. and the Gulf Refining Co. last month, R. M. Bartlett was elected vice-president in charge of fuel oil sales and H. P. Hobart was elected Vice President in Charge of Lubricating Oil Sales.

(TURN TO PAGE 250, PLEASE)

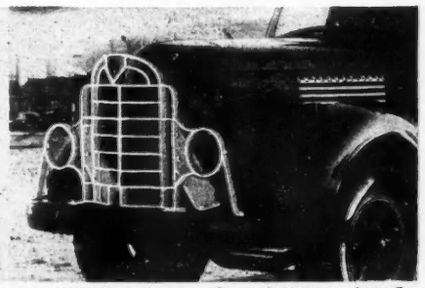
(Advertisement)



*Federal:* List Price from $35.00 to $48.00. Depending on Model.



*Dodge:* ½-1 Ton. List Price $34.00 1½-2 Ton. List Price $38.00



*International:* List Price from $40.00 to $55.75. Depending on Model.

LIBERAL DISCOUNTS TO DEALERS AND FLEET OWNERS • PRICES FOR OTHER MODELS ON APPLICATION

Better Grille Guards* *Sold from Coast to Coast* by BUSTIN

FOR ALL POPULAR MODELS OF 1946-1947 TRUCKS

ASK YOUR DEALER OR WRITE DIRECT TO

*All Patent Pend. Designs

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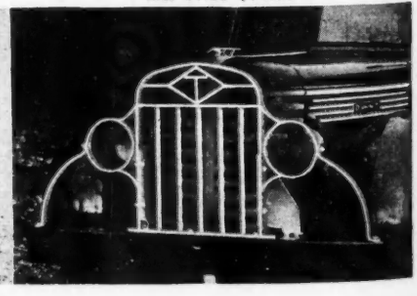
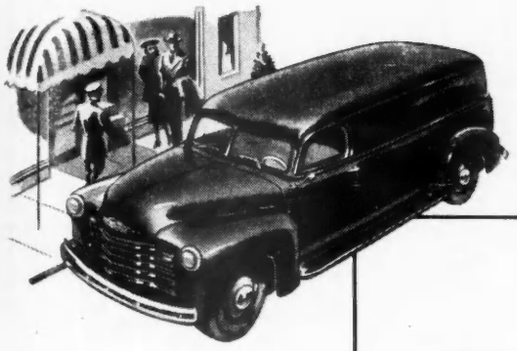
FREIGHT ALLOWED IN U. S. A. ON LOTS OF SIX OR MORE.

*White:* WA-22, WB-22 List Price $42.00

*Ward LaFrance:* List Price $58.00

*Diamond T:* #201, 306, 404, 509, 614. List Price $38.00



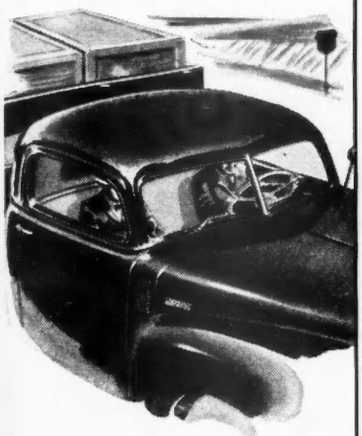


Panels and pick-ups have **INCREASED LOAD SPACE**—stake and high rack bodies **MORE EFFICIENT LOADING.** . . . New stronger, sturdier **FRAMES** are designed to carry greater loads greater distances for a longer time!

**THE CAB THAT "BREATHES"**—fresh air is *drawn in* from the outside—heated in cold weather—and used air is *forced out!* It's roomier, much more comfortable, with 12 inches more foot room—eight inches more seating space!

CHEVROLET

## *Winning the Nation's Praise! . . .*



Wider, deeper **WINDSHIELD** and **WINDOWS** increase visibility by 22%! New rear-corner windows, permitting even greater visibility are available as optional equipment at extra cost.

### *Advance-Design*

# CHEVROLET TRUCKS

***See the cab that "breathes"***

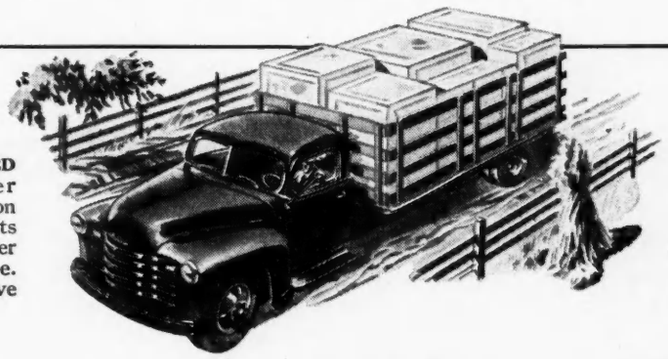
**You've *heard* about them . . . *talked* about them . . . and now they're here—ADVANCE-DESIGN trucks with the cab that "breathes"—that "inhales" fresh air and "exhales" used air!* Be sure to see this sensational new line of Chevrolet trucks with their scores of new features and innovations at your Chevrolet dealer's.** **Fresh-air heating and ventilating system optional at extra cost.*

**CHOOSE CHEVROLET TRUCKS FOR TRANSPORTATION UNLIMITED!**

**CHEVROLET MOTOR DIVISION, *General Motors Corporation*, DETROIT 2, MICHIGAN**

**VALVE-IN-HEAD TRUCK ENGINES** are world's most economical for their size. . . . Chevrolet's **HYDRAULIC TRUCK BRAKES** are *exclusively* designed for greater brake-lining contact and positive action!

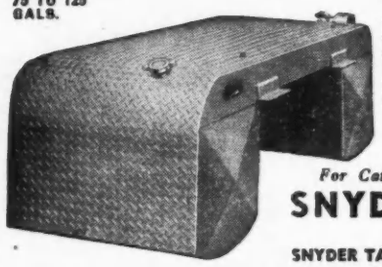
The cab is **FLEXI-MOUNTED**—cushioned on rubber against road shocks, torsion and vibration! . . . The seats are fully adjustable, bigger and more comfortable. **LONGER WHEELBASES** give better load distribution.



**SNYDER — THE TANK THAT MADE TRUCK OPERATION SAFE & PROFITABLE**

***MAXIMUM FIRE HAZARD PROTECTION — LESS REFUELING, FASTER, LONG SERVICE RUNS***

SNYDER SADDLE TANK CAPACITY 75 TO 125 GALS.



## SNYDER SAFETY TANKS

were born when Truck Transportation struggled as an infant industry. SNYDER progressive engineering research continually uncovering exclusive improvements (patents No. 218-1772—2273737 others pending) leads Truck Transportation into BIG BUSINESS, improvements available only in SNYDER SAFETY TANKS . . . U. L. approved.

**WHEN YOU BUY A TANK—BUY A SNYDER TANK—AND YOU BUY THE BEST.**

SNYDER CYLINDER TANK CAPACITY 28 TO 71 GALS

*For Catalog and Address of Your Nearest Distributor, Write:*

**SNYDER TANK CORPORATION**

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SNYDER TANK CORPORATION P. O. Box 2390, Birmingham, Ala.



**AMERICAN BOSCH**

AUTOMOTIVE & AVIATION ELECTRICAL PRODUCTS

FUEL INJECTION EQUIPMENT

American Bosch Corporation
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THE COMPLETE LINE that Completely Satisfies

Since 1906
The Fitzgerald Mfg. Co.
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*Fitzgerald*
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**HARD FACED VALVES**

Your used valves rebuilt for better performance and economy.

**LONGER SERVICE OVER UNPROTECTED VALVES**

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Please send information and price list.

NAME .....

STREET .....

CITY ..... STATE.....


## CCJ Newscast

(CONTINUED FROM PAGE 248)

### GROUP BUYS STEEL MILL

In the first move of its kind to beat the steel shortage, a syndicate of 25 manufacturers throughout the country has purchased an ingot-producing steel mill at Phoenixville, Pa., for approximately $4,000,000. Arnold H. Maremont, executive vice-president of Maremont Automotive Products, Inc., Chicago, is president of the group which also includes the AP Parts Corp. of Toledo.

The purchase was made in order to supply ingots for a sheet mill at Apollo, Pa., which the syndicate bought when it was organized last December. The new acquisition completes a program for meeting the manufacturers' steel needs.

The mill, with a capacity of 30,000 tons of ingots a month, was formerly the Phoenix Iron Co., and together with the plant at Apollo will be known as the Phoenix-Apollo Steel Co.

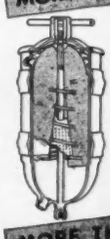
### NEW FORD HEATER

Ford and Mercury cars are now being equipped with a new-type fresh air combination ram and blower auto heater. Because of a "pressurized" effect inside the car, cold air drafts and window fogging are greatly reduced.

Developed by Ford Motor Co. engineers, the new heater scoops air from outside the car and through the combined force of a powerful blower and the "ram" or impact effect of the vehicle's speed "packs" an uninterrupted flow of warm, fresh air into the car. During summer driving it can be used to ventilate the car even when the

(TURN TO PAGE 252, PLEASE)


MORE THAN STRAINS



*Actually Cleanses Oil!*

**DELUXE** *Oil Filters*

MORE THAN FILTERS

DE LUXE PRODUCTS CORP., LA PORTE, IND.



PREFERRED FOR REPLACEMENT

**SKF**

BEARINGS



NEW LOW COST

**DRILL GRINDER**

Anyone can do expert drill grinding with this simple-to-use drill grinding attachment—fits on any bench grinder—saves buying new twist drills—saves time and materials that dull bits waste. Grinds bits from 3/16 to 1¼.

WRITE for FREE literature.

T & H MFG. CO.
811-N East 31st K. C., Mo.



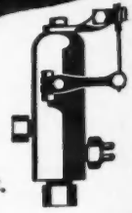
**It's rumored that...**

**more than 1,450 fleets are now using Perfect Circle's Fleet Survey Plan!** Right, and with its help they've been able to cut operating and maintenance costs. For information on how the Fleet Survey Plan can help *you*, see your P. C. representative or write: The Perfect Circle Companies, Hagerstown, Ind., U. S. A. and Toronto, Ont., Canada.



**HYDRAULOCK**

THE standard BRAKE LOCK



Pull Out Dash Control.
Step On Brake Pedal.
**Your Brakes Are Locked!**
*Write for information.*

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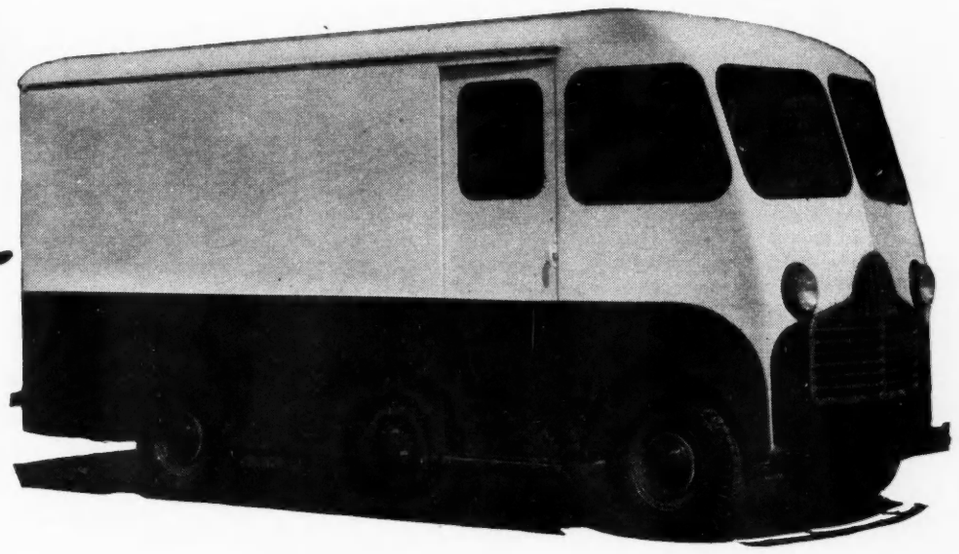
GALION, OHIO

## When payload is measured in cubic feet

# U·S·S COR-TEN increases the pay-off!



In the welded frame and understructure of this "Stor-Dor" delivery truck body, U·S·S Cor-Ten cuts weight almost one-third—lifts 200 lbs. of deadweight off motor, brakes and tires and gives maximum cubic foot capacity with minimum weight.

In light-duty delivery truck bodies where bulky, lightweight lading primarily calls for large cubic-foot capacity rather than brute strength, Cor-Ten construction pays off in several ways.

By its use, load space can be kept at a maximum. Unnecessary deadweight in the structure can be safely eliminated at low cost. And, at the same time, the strength and stamina that Cor-Ten adds, the long life its high resistance to atmospheric corrosion insures, will keep maintenance costs low. Of particular importance, and frequently overlooked, is the fact that with lighter bodies, a lighter chassis can be used. This not only means savings in first cost but in all operating costs for the life of the vehicle.

By using U·S·S Cor-Ten in heavy duty trucks and trailers, too, leading builders have, for the past twelve years, reduced weight to a minimum. They have materially increased payload capacity and have added strength and lasting qualities beyond the ordinary.

Edwards, Fruehauf, Herman, Trailmobile and many others, famous for the bigger-capacity, revenue-boosting transportation units they build, started their war on deadweight with U·S·S Cor-Ten. Here's what the Herman Body Company catalog says about Cor-Ten: "Its application has resulted in weight saving of 25 to 40%. Lower first cost of power equipment, lower license fees, better gasoline consumption, lower tire costs—are all a consequence of the weight saving factor.

So whatever service your equipment is used for—if you want it to carry maximum payload, to stand up longer and to cost less to operate and maintain—get the facts about U·S·S Cor-Ten. You'll find the complete story in our new "Cor-Ten" book—send for it.

## U·S·S HIGH STRENGTH STEELS

U·S·S COR-TEN · U·S·S MAN-TEN · U·S·S ABRASION-RESISTING · U·S·S MANGANESE-NICKEL-COPPER

USS HIGH STRENGTH STEEL UNITED STATES STEEL

7-1227

**UNITED STATES STEEL** AMERICAN STEEL & WIRE COMPANY, Cleveland, Chicago & New York
CARNEGIE-ILLINOIS STEEL CORPORATION, Pittsburgh & Chicago · COLUMBIA STEEL COMPANY, San Francisco
NATIONAL TUBE COMPANY, Pittsburgh · TENNESSEE COAL, IRON & RAILROAD COMPANY, Birmingham
UNITED STATES STEEL SUPPLY COMPANY (Warehouse Distributors), Chicago : UNITED STATES STEEL EXPORT COMPANY, New York


**PLUGS INTO ANY LIGHT SOCKET!**

EVERY motorist needs one! Hung under hood or in front of grill or under motor will warm too-cold-to-start motor quickly, safely — saves time, tempers, batteries. Low power consumption—leave on all night for instant starting! Chromalox heating element, adjustable thermostat, pilot light, six feet cord. Use outside or in garage. FULLY GUARANTEED. Only $5.95 F.O.B. Order now, supply limited.

**"JIFFY" ECONOMY MODEL**

Low cost, quick-action type for emergency warm ups. Chromalox heating element, six feet of cord, fully enclosed, fully guaranteed. $2.95 F.O.B.

**H. D. CAMPBELL CO.**
ROCHELLE 62, ILL.



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With Fleet Forms it's easy to keep **complete** service and cost records for every vehicle in your fleet. So simplified any attendant can keep these records. So complete you can see the whole story at a glance. Schedules inspections and periodic maintenance, plus dozens of other types data . . . on **one** record. *Write today for free samples and prices*

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**MOHAWK TIRES**
and Recapping Materials are both GOOD

The
Mohawk Rubber Co., Akron 5, Ohio


## CCJ Newscast

(CONTINUED FROM PAGE 250)

windows are closed due to rain or dusty road conditions.

The radiator grille serves as intake. Air is routed through a duct affixed to the underside of the hood. A siroco type blower pushes the air into a high efficiency copper core through which hot water is circulated. The heater is extremely compact and also quiet, since the blower, prime noise maker in any heater, is tucked under the hood.

### FWD RE-ELECTS OFFICERS

The annual stockholders' meeting of The Four Wheel Drive Auto Company was held September 9 at which time all members of the Board of Directors were re-elected. Walter A. Olen was re-elected president for the 38th time at the organization meeting of the Board of Directors immediately following the stockholders' meeting. All other officers of the company were also re-elected.

At the stockholders' meeting the stockholders, by an overwhelming vote, increased the capitalization of the company from three million to six million dollars. By a comparable vote the Articles of Incorporation were amended eliminating the preemptive rights of stockholders, which will enable the company to place the stock without the cumbersome method of having to distribute it on an allotment basis.

The management reported a successful operation of the company for the first two months of its new year and reported a backlog of orders amounting to over $7 million.

(TURN TO PAGE 254, PLEASE)


**Permalux**
FINER DECALCOMANIA
FIRST IN { APPEARANCE ECONOMY DURABILITY
Made With DuPont "DULUX"
*Write Today for details*
THE PERMALUX COMPANY
500 Rathbone Ave. • Aurora, Ill.



America's Leading HEAVY-DUTY TRUCK Manufacturers Standardize on **LIPE CLUTCHES**

★ for more miles between teardowns!
★ for less wear and tear on the truck!
★ for easier maintenance and replacement!

LIPE-ROLLWAY CORP.
SYRACUSE, N. Y.



**FRINK SNO-PLOWS**
REG. U.S. PAT. OFF.
Both "V" TYPE and ONE WAY BLADE TYPE
*hand or power hydraulic control*
FOR ALL MOTOR TRUCKS FROM 1½ to 10 TONS
CARL N. FRINK, Mfr., CLAYTON, 1000 Isl., N. Y.
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**SPINNING POWER**

-a Companion Product of *Full-Spark* Plugs
GLOBE-UNION INC.
MILWAUKEE 1, WIS.




*Cal-Van* **GARAGE TOOLS**

2 and 3 FINGER TYPE

CARBON SCRAPER
LIGHT BULB PLIERS
RING COMPRESSORS
CREEPER CASTERS
BUSHING REMOVERS
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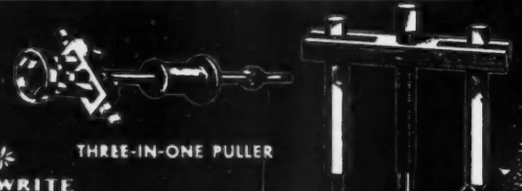

THREE-IN-ONE PULLER
WRITE FOR CATALOG
NO. 10 TIMING GEAR PULLER

**Cal-Van** MACHINE PRODUCTS INC.
JACKSON, MICHIGAN U.S.A.



*BETTER than Ever Before*

Repower with
**RAMCO** 10 up
PISTON RINGS


# MORE POWER to Dart Trucks...
## *over-the-road or off-the-highway*

**Heavy duty? Dart Trucks are built for it! And for *heaviest* duty, Dart goes to work with a Series 400 Hall-Scott Engine... the most powerful engine in the trucking business.**

**This extra power means *consistently* better performance. And because every Hall-Scott Engine produces maximum torque at low r.p.m., maintenance costs can be kept far lower than is possible with smaller, higher-speed engines.**

**For original equipment or re-powering, get the full story on Hall-Scott. Your choice of gasoline or butane adaptation.**

HALL POWER BY SCOTT

**HALL-SCOTT**

**MOTOR CAR COMPANY**

FACTORY AND MAIN OFFICE
BERKELEY 2, CALIFORNIA

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**DIVISION OF**

**ACF-BRILL Motors Company**

POROUS CASTINGS RUIN MOTORS

USE ZO-TITE BLOCK SAVER

Metallic Powder Treatment

A completely different method for the repair of cracked blocks and porosity. Preferred by many fleets. Try it. Test it on tough jobs. COMPARE RESULTS. Money back if no better than your present method. (12 cans to carton).

ASK YOUR JOBBER OR WRITE

THE ZO-TITE PRODUCTS CO.

OZONE PARK 16, N. Y.

Complete SPRING SUSPENSION PARTS


MOOG INDUSTRIES INC.

ST. LOUIS, MO.

DESIGN LATEST QUALITY UNQUESTIONED

SEE YOUR LOCAL JOBBER


KEN-TOOL MFG. CO. AKRON, O.

LARGEST EXCLUSIVE MFGR'S OF SPECIALIZED WHEEL AND TIRE CHANGING TOOLS KNOWN AND USED AROUND THE WORLD

FOR PROMPT COMPLETE SERVICE ON AUTOMOTIVE PARTS...

Your NAPA Jobber is a Good Man to Know!

NATIONAL AUTOMOTIVE PARTS ASSOCIATION

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DAYTON Spoke Type Steel

WHEELS

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BRAKE DRUMS AND TIRES

FOR TRUCKS, TRAILERS AND BUSES.

THE DAYTON STEEL FOUNDRY CO.

DAYTON, OHIO

UNITS AVAILABLE

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2-AXLE DRIVE

19842 W. Eight Mile Rd.

Detroit 19, Michigan

## CCJ Newscast

(CONTINUED FROM PAGE 252)

### FRUEHAUF STEPS UP BODY OUTPUT

Demand for the new Fruehauf all-steel truck body is greatly exceeding expectations, says Roy A. Fruehauf, executive vice president, Fruehauf Trailer Company, who reports that the company has converted its Kansas City plant 100 per cent to truck body manufacture.

"Production is currently scheduled for five complete bodies an hour, and is expected to be stepped up to ten an hour by January," Mr. Fruehauf says.

The bodies, which can be easily assembled, are "packaged" and shipped in knocked-down kits to Fruehauf branches for installation and distribution.

### TREASURY REVISES BID

Acting on a request by the National Tank Truck Carriers, Inc., the Treasury Department's Bureau of Federal Supply has discontinued use of a condition in its invitations to bid on Government needs for gasoline and fuel oil in lots of 150,000 gal. or less, under which it did not consider f.o.b. bulk plant quotations when bids f.o.b. destination were received.

C. Austin Sutherland, secretary-manager of the tank truck organization, a Conference of the American Trucking Associations, Inc., announced the change had been made following his objection to the condition on the ground it restricted competition between for-hire and private motor carriers.

(TURN TO PAGE 256, PLEASE)

AUTOPULSE ELECTRIC FUEL PUMP

- Used in any car or truck
- No vapor lock
- Instant starting
- No stalling in traffic
- Greater fuel economy
- Added protection

AUTOPULSE CORP., LUDINGTON, MICH.

USE KEX TIRE PLUGS

You Can't Go Wrong!


Metal quill mounted on each plug stem.

The Wedler-Shuford Co.

St. Louis 3, Mo.

CLIX ENGINE PROTECTION

Pressure Clix

- Signal device for lost oil pressure—lost air pressure in braking system on gasoline and Diesel engines.

Thermo Clix

- Instant alarming device when temperature of the engine reaches the danger point.

*Write for descriptive folder today!*

THE NASON CO.

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Available Trucks

1½ TO 20 TONS

TRUCKS • TRACTORS

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*The* PRACTICAL LOW-PRICED LINE OF WHEEL ALIGNMENT INSTRUMENTS

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*for FLEET MARKING*

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**2 WHEEL DRIVE** "Jeep" Trucks set new marks for low-cost operation and maintenance. 4700-5300 lbs. gross vehicle weight. Functionally designed bodies in all popular styles.

**These are the trucks that America had a right to expect from Willys-Overland. Built around the world-famous 'Jeep' Engine, they set new standards for performance, economy and sheer engineering excellence.**

**4 WHEEL DRIVE** "Jeep" Trucks for the tough hauling jobs—off the road, through deep mud, up steep grades, over icy roads. 5300 lbs. gross vehicle wt. Power take-off optional.

## 'Jeep' Trucks

WILLYS-OVERLAND MOTORS, TOLEDO, OHIO—MAKERS OF AMERICA'S MOST USEFUL VEHICLES

**AIR-O-MATIC POWER STEER CO.**
2180 Lee Road · · · · Cleveland 18, Ohio

## Easier and Safer TRUCK MANEUVERABILITY

A self-contained unit of extremely simple construction, yet exceptionally effective and precise in operation. No buttons or levers are required to operate the Air-O-Matic Power Steer—it works automatically, helping only as the operator of the vehicle leads the steering wheel in either direction. It automatically stops helping when the operator stops leading the steering wheel. Details and technical information available on request.

Hygrade Fine Automotive Products

**HYGRADE**
**REPLACEMENT PARTS**
CARBURETOR & FUEL PUMP PARTS
SPEEDOMETER CABLE AND CASING
SHOCK LINKS AND BUSHINGS
FUEL LINES AND FITTINGS
HYGRADE PRODUCTS CO., INC.
35-35 Thirty-fifth St., Long Island City 1, N.Y.

**for SAFETY**
REFLECTORS • LAMPS • FLARES
GROTE
GROTE Manufacturing Company, Inc. Bellevue, Ky.
Automotive Sales Office: Moorestown, N. J.


## CCJ Newscast

(CONTINUED FROM PAGE 254)

### NEW BODY DISTRIBUTORS

Announcement of the appointment of the following new distributors has been made by Mid West Body & Mfg. Div., Paris, Ill:

Ashton Truck Equipment Co., 106 Somerset Drive, Cincinnati, Ohio; Carolina Equipment Sales Corp., 1513 Statesville Ave., Charlotte, N. C.; The Lang Co., 1621 Harrision Ave., Salt Lake City, Utah; The Lang Co., Idaho Falls, Idaho; Memphis Truck Equipment Co., 721 Union Ave., Memphis, Tenn.; Motor Truck Equipment Co., 25 E. Henry Street, Youngstown, Ohio; Rivers Body Factory, 2304 N. Myrtle Ave., Jacksonville, Fla.; and Rosman Metal Body Co., Inc., 126-01 Hillside Ave., Richmond Hill, N. Y.

Since introduction of its line of stake and platform and farm bodies in February, 1946, the Mid West Body and Mfg. Div. has produced more than 12,000 truck bodies and has grown to be regarded as the largest farm truck body builder.

(TURN TO PAGE 258, PLEASE)


**VENTALARM**
T.M. REG. U. S. PAT. OFF.
*Whistling Tank*
*Fill Signal*
**SCULLY SIGNAL COMPANY**
88 FIRST ST. CAMBRIDGE 41, MASS.

J. H. Williams & Co., Buffalo 7, N. Y.
"The Wrench People"

SELF-CLOSING MONKEY LINK

Trade Mark Reg. U. S. Pat. Office

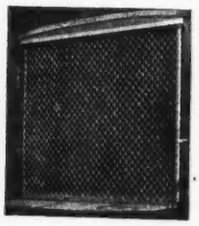
**MONKEY LINKS**
Fit all types of Tire Chains.
Made in 5 sizes.
*Order them today.*
**FLOWER CITY SPECIALTY CO.**
Rochester, N. Y.

Better—but *not* more expensive!
**SHULER AXLES**
SHULER AXLE CO.
LOUISVILLE, KY.

**HARDCOTE FINISHES for *Weatherproof Protection!***
BRIGHT, RICH, LASTING COLORS . . . *Dry in 4 hours*
These specially formulated finishes are easy to apply—dry hard to a smooth, glossy, LASTING finish. Resistant to sun, rain, heat and chemicals, they're ideal for trucks, busses and all other commercial vehicles. In use everywhere. Write for color card and information.


McDOUGALL-BUTLER CO., INC. BUFFALO, NEW YORK
*Fine Finishes Since 1887*

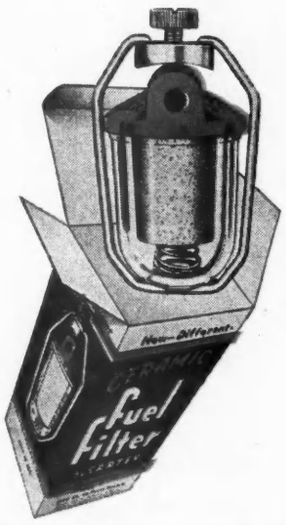
**ZEHR**
**COLLAPSIBLE TRUCK BACKS**



Safe . . . easy and simple to handle. Zehr Truck Backs are all-welded steel designed for great strength and long continuous service. They are theft-proof, rust-proof and flexible.
Write for details and prices.
ZEHR PRODUCTS COMPANY
2130 East Hazzard Street, Philadelphia 25, Pa.

# Fourfold Capacity-

## The CARTER Foursome Ceramic Fuel Filter




The standard Carter Ceramic Fuel Filter. Uses same filtering element made of specially prepared porcelain to assure a steady flow of gasoline free from dirt, lint and all harmful matter. List Price $2.10.

Not just a single unit — but *four* scientifically designed ceramic units of specially prepared porcelain in a rugged body to meet the punishing demands of heavy duty service on trucks, buses, passenger cars and stationary engines.

The Carter Ceramic unit is a real *filter* that will stop particles as small as 1/25,000 inch — yet allowing free flow of fuel to the carbureter.

Order from your nearest Carter distributor or jobber—
List Price $7.35

CARBURETER

TRADE MARK REG. U. S. PAT. OFF.
MARCA REGISTRADA

**CARTER CARBURETOR CORPORATION • SAINT LOUIS 7, MISSOURI**

*Division of American Car & Foundry Company*

572

Oldforge "Quality" Tools

**Oldforge** Quality Tools have a background of more than 23 years. Skilled mechanics everywhere know and use **Oldforge Tools** because they are properly designed and tempered to do the job.

If you are not now an **Oldforge** tool user, see your supplier or write us direct. Experience for yourself the thrill and satisfaction of using **Oldforge** Quality Tools.

**QUALITY TOOLS CORP., New Wilmington, Pa.**
New York Office: 11 Warren St. • Phone WOrth: 3640



**INVESTIGATE Quixign Lettering Method Now!**

Your fleet can be rolling billboards . . . Have enough EYE APPEAL to advertise, sell and deliver your products or service daily wherever they go.

**Use** . . . ***Quixign Plain or Adhesive Coated Stencil Paper. Quixign Ready-to-apply Masked Stencils. Quixign Quality Enamels or Lacquers.***

A complete detailed folder has been prepared, giving step-by-step instructions. Write today for full particulars.

**ASHLEY QUIXIGN COMPANY**
**15330 Idaho Ave. Detroit 3, Mich.**





## CCJ Newscast

(CONTINUED FROM PAGE 256)

### FRANK S. WILLEY DIES

Frank S. Willey, 70, founder of F. S. Willey Co., Inc., large New England motor express operation, died at Laconia, N. H., early last month.

Mr. Willey had served as a director of ATA and was a charter member of the Truck Owners Association, the Traffic Club and the Motor Freight Carriers, Inc., all of Boston.

### UNIQUE MUFFLER GUARANTEE

International Parts Corp., Chicago, has announced that effective immediately, all its mufflers will carry a lifetime guarantee not to blow out for the entire life of the vehicle on which it is installed.

### PA. DRIVER OF THE MONTH

Norman S. Moyer of Roxborough, Pa. (near Philadelphia) was selected as state "Driver of the Month" in connection with the current ATA safety campaign. Moyer, who drives for Coastal Tank Lines of York, Pa., had completed 748,000 miles during 11½ years without an accident.



**ARROW SAFETY DEVICE CO.**
**MOUNT HOLLY, N. J.**



**KINNEAR Rolling Doors**

On truck bodies *or* buildings, Kinnear Doors are efficient, dependable, economical. Steel-slat curtain coils upward, out of way. Any size; motor operation if desired. Write for details.

THE Kinnear Manufacturing Company
2100-20 Fields Avenue, Columbus 16, Ohio






Why wish for Ward LaFrance quality when you can get a Ward LaFrance truck as quickly as you can say Ward LaFrance—well, almost!

See your dealer or write for illustrated bulletins with specifications and body builder's chart.

**WARD LAFRANCE TRUCK DIV., Elmira, N.Y.**




**HOOF** *FULL POWER* **GOVERNORS**

SEND FOR FREE BOOKLET
HOOF PRODUCTS COMPANY
6343 SO. LARAMIE AVENUE, CHICAGO 38, ILL.



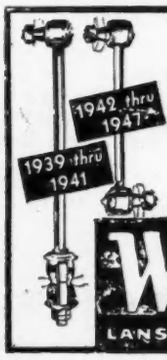
**SALESMEN**
*Experienced Fleet Men*
**DIRECT TO USER SALES**
Oil Filter Elements
**REFILL FILTER CO.**
120 Rhode Island Ave.
East Orange, N. J.



**IDENTIFY TIRES**

**BRANDING Quick and Easy!**
Code Records Give Data on Tires.
WRITE FOR FOLDER
**KEEL & CO., Inc., Phila. 44, Pa.**






*NEW*
**SHOCK ABSORBER LINK ASSEMBLIES**
*for* CHEVROLET - ALL PASSENGER CARS

**Wohlert** CORPORATION
LANSING 5, MICHIGAN



**J. P. WASHER**

Revolutionary NEW washing method for Automotive and Industrial Cleaning.

A real money-saver and money-maker.

Write for further information.

**J. P. MANUFACTURING, Inc.**
330 E. FRONT ST., YOUNGSTOWN, OHIO